

### **Seven Hills Mine HGM - Response to EPA Comments**

To: Mr. Bryce West, Peabody Energy

From: Rick Larsen, Eco-Tech Consultants, Inc.

Subject: 2017 Hydrogeomorphic Assessment of the Seven Hills Mine Update

Warrick County, Indiana

Eco-Tech Consultants Project LV2017009

Date: May 16, 2017

In response to comments presented by the EPA regarding the Hydrogeomorphic Assessment (HGM) conducted at the proposed Seven Hills Surface Mine site, Eco-Tech offers the following points for clarification:

#### 1. Weighted Functional Capacity Indices

FCIs should be weighted by area and cover types should be segregated into partial wetland assessment areas.

As the HGM is a measure of functional quality over a representative area, giving it equal weight to each plot separate of the relative acreage it represents of the site, under-represents the condition of the forested areas onsite. Since the WKY Guidebook uses a mature forest as the reference standard condition, areas of herbaceous and shrub cover will show decreases in vegetative subindices. According to the WKY Guidebook, areas of varying cover types should be segregated into separate partial wetland assessment areas, so that the effects of the earlier successional vegetative community types can be evaluated apart from the more mature forested communities. By identifying the areas and associated acreages the plots represent, a detailed discussion of avoidance and minimization efforts can be applied, where practicable, and then calculated directly for the wetland resource impacted.

In 2006, Eco-tech provided areas and associated acreages that each of the sample plots represented. They also provided several estimate plot values for area, where scores would be different based on certain parameters such as proximity to streams.

Eco-Tech - See tables below for estimated functional capacity units (FCU) for the Seven Hills Mine wetland impacts and avoidances based on average FCI's by wetland type.

Wetland Type	Total Impacted Acreage	Avg. FCI	FCU
PFO	451.17	0.90	406.05
PEM	22.67	0.68	15.42
PSS	18.45	0.77	14.21
TOTAL	492.29	NA	435.68

Wetland Type	Total Avoided Acreage	Avg. FCI	FCU
PFO	218.14	0.90	196.33
PEM	25.09	0.68	17.06
PSS	56.62	0.77	43.60
TOTAL	299.85	NA	256.98

#### 2. Direct comparison of 2006 and 2017 data

The relocation of plots prevented a direct comparison of all the 2006 and 2017 data. While we understand the need to represent the conditions and various cover types within the sites, adding plots to allow the direct comparison of all sites is preferred.

Additionally, there were changes in some individual variables which were not fully explained (Vslope, Vstore, Vwtslope, Vohor, Vahor) that little or no change would be expected given that site conditions were relatively unchanged with no anthropogenic changes.

Eco-Tech - 2017 plots 2, 3, 4, 6, 8, and 9 are located in approximately the same location as in 2006. However, the 2006 HGM plots were not located with a sub-meter accuracy GPS so the position of the 2017 assessment points could be off by as much as 60-70' from original locations. Plot 1 was relocated to the nearest PEM as the 2006 location is currently a scrub-shrub community. Plot 5 was relocated to the west due to standing water as a result of beaver activity. Plot 7 was relocated to a different portion of the scrub-shrub community due to the 2006 plot now consisting of trees and not shrubs. Two additional plots (10 & 11) were added in estimated 85+ year old forested community stands. Unfortunately the 2006 data sheets and calculations are not available for Vslope, Vstore, Vwtslope, Vohor, Vahor.

#### 3. <u>Presentation and comparison of plots as a FCI means</u>

Eco-tech states that "overall wetland functions of the Pigeon Creek floodplain appear to have changed little over the last 11 years based on the comparative HGM assessment of the proposed mine site. No

recent anthropogenic impacts of natural disturbances were noted with the wetland assessment area and the site remains in a similar condition to 2006."

Variations in the individual functional scores and functional measures do not support this statement. For example, plot 4 appeared to have successional changes at both the functional level and the variable measures which include an increase in tree density, tree basal area, and snags, understory biomass reduction (no sub-index score change), and an increase in coarse woody debris. These measures indicate some maturation and successional development, but is skewed by reductions in other functions on every plot for export carbon, maintain characteristic hydrology, cycle nutrients, and remove and sequester elements and compounds. However, portions of those functions were based on reductions in variables that we would not expect to change on a site that has little disturbance and no anthropogenic impacts. See specific comments below on each variable.

#### 4. Representative Assessment of the Export Carbon function (V<sub>surfcon</sub>)

Eco-tech indicated that they changed their interpretation of this function for the 2017 assessment. As stated in the WKY Guidebook, Export of Carbon is "the capacity of the wetland to export the dissolved and particulate organic carbon produced in the riverine wetland. Mechanism include leaching of litter, flushing, displacement, and erosion." The implicit process in Organic Carbon Export is that the site is hydrologically connected to areas downstream. Although Eco-Tech has interpreted the surface connection variable very literally as an "altered channel" they did not consider the variable in the greater context of the site and other functions performed. The Temporary Storage of Surface Water and Particulate Retention functions both require surface water from the channel (represented by Vfreq) to enter the floodplain in order to be stored and drop sediment. This very connection, acknowledged by Eco-Tech as taking place at reference standard levels (FCI = 1.0 for both functions in all cover types) seems to contradict the assertion that the carbon export function does not take place. We question the scoring this function as zero, indicating the wetland is not performing organic carbon export in any capacity.

Based on a review of their data, the Export Carbon function was scored as zero based solely on their application of V<sub>surfcon</sub>. The surface connection variable "represents the internal network of shallow surface water channels that usually connect the riverine wetland to the stream channel on low gradient, riverine floodplains. Typically, these channels intersect the river channel through low spots in the natural levee. When water levels are below channel full, these channels serve as the route for surface water, and the dissolved and particulate organic matter it carries, as it moves from the floodplain to the stream channel. This same network of channels routes overbank floodwater to riverine wetlands during the early stages of overbank flooding." By Eco-tech scoring the percent altered at 100 they are making the conclusion that the alteration of the system is preventing it from any surface connections and means there is no linear connection through tributaries or to Pigeon Creek itself. EPA recognizes Pigeon Creek has been channelized in the past and small tributaries to Pigeon Creek have down-cut to the point where it may require larger flow events to cause water to spill over the banks. However, it does not take an overbank event from Pigeon Creek to "back" water up onto the floodplain via the tributary/drainage channels. If those tributary channels cannot outlet the water due to higher flows in Pigeon Creek, the surface water draining to those channels will back up onto the floodplain. Once Pigeon Creek flows diminish, then the

flows from the tributaries will drain into Pigeon Creek along with dissolved and particulate organic matter which will be utilized downstream.

The intent of the  $V_{\text{surfcon}}$  variable was to represent the necessity of surface water connections between the floodplain and the stream channel to transport organic material downstream to support aquatic organisms. The stressor this variable was intended to capture were levees which prevented floodplains from being inundated by larger stream flows. Although the exchange of surface water between Pigeon Creek and the adjacent riverine wetland/floodplain may be diminished, EPA contends it is not absent. Therefore, the variable scoring should be revised along with the functional capacity index to reflect a more realistic estimate of stream alterations that limit function.

(Noted that the Vohor is reduced in some locations plot 1, plot 3, plot 4, plot 6 where did it go? My assumption based on ecological processes is either that it was decomposed more to be part of Vahor (but there are no Vahor no a horizons documented) or exported downstream because it is actually connected which is not reflected in the functional assessment of Vsurfcon.)

Eco-Tech - As discussed during last Friday's teleconference the most accurate method to quantify the sites surface connection alteration is to look at nearby unaltered stream reaches and determine the average number surface connections and relate that to current on-site connections. On the proposed Seven Hills mine site between Seven Hills Rd and New Harmony Rd there are five surface connections along the right bank of Pigeon Creek (3.3 river miles). This represents 1.5 surface connections per mile. Based on a review of the USGS 7.5 minute quadrangle there are an estimated 15 drainages along the western hill slope that historically would have drained through the floodplain and into Pigeon Creek or an estimated 4.5 drainages per mile. These 15 drainages are now confined to five due to channelization of Pigeon Creek. We used USGS National Hydrology Dataset (NHD) information to look at two nearby nonchannelized stream reaches and their tributary connections. Pigeon Creek from just downstream of 50N continuing for approximately 3.1 miles downstream has 16 tributary connections or approximately 5.1 connections per mile on the right bank. Little Pigeon Creek from County Road 200N downstream for 3.2 miles has 13 tributary connections or approximately 4 connections per mile. An average of these two locations is 4.5 connections per mile as well as estimated on-site connection per mile (15 connections over 3.3 miles). Based on an unaltered surface floodplain connection average of 4.5 per mile we assess Vsurfcon at 67% (Subindex = 0.33).

Seven Hills Surface Connections	1.5/mile
Pigeon Creek Drainage Subsample Average	4.5/mile
Percent Difference	67%
V <sub>surfcon</sub> subindex	0.33

May 16, 2017

#### 5. Units of measurement

A careful examination of the field data that comprise the basis for the variable subindices indicated that in some instances appropriate plot size may not have been utilized. For instance, some variables are assessed using a 0.04 ha plot, some using a 0.004 ha plot, and others using a one square meter plot. Appropriate conversion factors may not have been used in all calculations which would affect the final variable field estimate and the associated subindex. The lack of documented assumptions and field conditions affecting variable measurement, along with incomplete field data sheets, made it difficult to decipher how the subindex scores were calculated. Field measurements and the calculation of subindex values should be reviewed and revised as appropriate.

Eco-Tech – All plots followed the HGM methodologies for field plot layout. All tree basal areas, tree stems, and snags we sampled using one 0.04 ha circular plot. All woody debris ( $V_{WD}$ ) and logs ( $V_{LOG}$ ) variables were sampled along two 15 meter transects partially within the 0.04 ha plot. Understory stems ( $V_{SSD}$ ) were sampled within the entire 0.04 ha circular plot for plots 1, 2, 3, 6, 7, 9, 10 and 11. Two  $V_{SSD}$  0.004 ha circular subplots were used for plots 4, 5, and 8 due to higher density of stems. Percent ground cover, "O" horizon, and "A" horizon variables were sampled using four square meter subplots.  $V_{comp}$  ground vegetation was sampled using one square meter plot.

Understanding changes in sub index measurement and scores. Below are listed the subindices which need clarification. The subindices are listed in the order described in the Appendix B for ease of review.

5.1.  $V_{tract}$  – Provide the boundaries of tract on a map with an aerial.

#### Eco-Tech - See Figure 2 for $V_{TRACT}$ boundary.

5.2. V<sub>slope</sub> – The slope calculated changed from 0.003 in 2006 to 0.02 in 2017. Please explain the change in slope value.

Eco-Tech – Without 2006 data sheets it is unknown how V<sub>SLOPE</sub> was calculated. Vslope was calculated on the revised plots using floodplain spot elevations between Seven Hills Road (388.8 msl) and Boonville New Harmony Road (382.8 msl). There is six feet of fall over 17,525 feet of valley length for a 0.03 Vslope. This variable has been revised.

5.3. V<sub>rough</sub> – This is a measure of roughness. In plot 4 and 8, there was no change to macrotopography (V<sub>macro</sub>), woody debris (Vwd) increased, and log biomass (Vlog) increased but overall roughness decreased. These other subindices indicate and increase in obstructions and would be correspondingly detected in this measure. Conversely in plot 2, there was no change in roughness despite a decrease in Vwd and Vlog. Recommend a review this measure and revision as appropriate.

Eco-Tech – In Plot 4 it's true that macrotopography did not change and Vwd increased, however, Vlog was 0 in both 2006 and 2017. We assume that an increase in smaller class size sticks ( $V_{WD}$ ) from 2006 to 2017 would not necessarily increase roughness due to increased obstructions. We did not consider small sticks to be "obstructions".

Again in Plot 8, it's true that macrotopography did not change but  $V_{WD}$  and  $V_{LOG}$  are both 9.5 based on the transect hitting only one class 3 size log with a 6" diameter. It's possible that in 2006 overall roughness of the plot was higher (more obstructions) than in 2017 but the woody debris transects did not hit any obstructions in 2006. Also, woody obstructions, and hummocks created by downed trees could have been present in 2006 but are no longer there 11 years later. Differences in exact plot locations could also contribute to this decrease. Again, without 2006 data sheets that show the values used for roughness components, it's difficult to know why there is a difference in roughness calculations.

Actually,  $V_{ROUGH}$  increased (0.15 to 0.187) and there was an increase in  $V_{WD}$  (29.4 to 37.4) and a decrease in  $V_{LOG}$  (35 to 29.8). Regardless, subindices are 1.00 for all mentioned variables.

5.4. V<sub>soilint</sub> – Eco-tech noted that there are no altered soils however, there were changes to other soil sub-indices to include measures of the O horizons and A horizons. See notes on each below.

#### Eco-Tech - See appropriate variable below.

5.5. V<sub>wtslope</sub> – It is not clear why the water table slope changed from 2006 to 2017. Again without a methodology it is difficult to understand the manner this subindex was calculated. However, it appears from a review of the data that Pigeon creek was treated as a ditch and not a dredged stream when calculating the watertable slope. Recommend the historic bottom elevation of Pigeon Creek used and the depth of alteration would be the difference between the old and new channel.

Eco-Tech –  $V_{WTSLOPE}$  has been calculated using the historic bottom elevation of Pigeon Creek to determine the depth of alteration. Historic Pigeon Creek bankfull depth was obtained from regional bankfull-channel dimensions using USGS StreamStats. We assumed that the original top of bank would have been bankfull. The current channel depth is approximately 15 feet and the historic depth is 5 feet for a 10 foot depth of alteration. See attached Pigeon Creek cross-sections for existing conditions and StreamStats for historic bankfull dimensions.

5.6.  $V_{\text{store}}$  – How did the floodplain storage change from 2006 to 2017? While the functional subindex was 1.0, it seems odd that there were changes in the ratio of floodplain to channel width.

Eco-Tech – Without 2006 data sheets it is unknown how  $V_{STORE}$  was originally calculated. In 2017 we assumed an average 50 foot channel width for Pigeon Creek. All floodplain widths were measured from USGS 7.5 minute topographic maps. Widths are measured from the contour interval at the toe-of-slope to the opposite bank toe-of-slope in a line running perpendicular to the valley through the plot location.

5.7. V<sub>surfcon</sub> – See note comments on Export Carbon above. This subindex score needs to be revised.

#### Eco-Tech – See response to 4. The subindex has been revised to 0.33.

5.8. V<sub>ten</sub> – Explain the increase of tree density in plot 3, 4, 5, 6, and 9 and how it may be reflected in another metric such as a change in understory vegetation biomass (which could reflect understory succession into the tree level) or Vsnag (which may reflect the death of trees from 2011). Also

explain the reduction in tree density in plot 2 and how it relates to changes conversely in other metrics.

Eco-Tech — The difference in tree density is most likely attributed to slightly different plot locations between 2006 and 2017 assessments. A review of aerial photography shows a timber harvest took place in the Plot 2 area during 2009 and 2010. This was the only noticeable logging we noted in the plots.

- 5.9.  $V_{tba}$  Explain the changes in tree basal area. For example in plot 3, there was an increase in tree density by 174 stems/ha but the tree basal area only increased slightly by 0.03 m<sup>2</sup>/ha. Also review the reduction in basal area on plot 6, when the tree density increased by 125 stems/ha.
  - Eco-Tech Plot 3 was relocated due to deep standing water. Plot 6 was sampled in approximately the same area both years. However, this area contains large trees and a slight shift in plot location would result in different  $V_{TBA}$  values.
- 5.10. V<sub>ssd</sub> This metric was incorrectly calculated. Based on the field datasheets it appears Eco-tech used the total stems counted in two plots not the average of those counts. This change increases the stem count and affects the functional subindex. For example, plot 1 this resulted in a functional measure of 850 instead of 725 stems per hectare and resulted in a lower functional subindex score of 0.50 instead of 0.55. The data for measures should be reviewed and recalculated as appropriate.
  - Eco-Tech Understory stems were sampled within the entire 0.04 ha circular plot for plots 1, 2, 3, 6, 7, 9, 10 and 11. Two  $V_{SSD}$  0.004 ha circular subplots were used for plots 4, 5, and 8 due to higher density of stems. Plots 4, 5, and 8 were incorrectly calculated. They have been revised to reflect an average as directed.
- 5.11. V<sub>ahor</sub> Eco-tech did not document any "A horizons" during the 2017 data collection. The Web Soil Survey for the site indicates all soil series mapped on the site developed A-horizons. The procedure outlined in the WKY Guidebook to verify the presence of an A-horizon requires, the soil horizon begin just below the O-horizon or at the surface and is considered an "A" horizon, if it is at least 7.6 cm (3in) thick and has a munsell color value less than or equal to 4." As Eco-Tech noted in their narrative and is reflected in the soil integrity subindex (Vsoilint), the soils on site have not been altered. Therefore, EPA would anticipate that the soils structure would not change. Explain the changes in the "A horizon" subindex.
  - Eco-Tech  $V_{AHOR}$  was misinterpreted and after a more thorough review of the Bonnie and Birds soil series it has been determined that all plots have an "A" horizon of at least 3 inches thick and a color value less than or equal to 4. Both soil series lack a B-horizon but have a relatively thick (15 to 28 inches) A-horizon located just below the O-horizon. Soils sampled within the proposed mine site generally exhibit characteristics of a depleted matrix hydric soil indicator. This subindex has been revised.
- 5.12.  $V_{wd}$  It appears there were errors in calculations within the datasheets. Specifically, on size class 3 tons per acre on the data sheet which appear to be corrected on the final spread sheet. These calculations should be reviewed and corrected as needed.

Eco-Tech – In Plot 3, we accidentally inverted  $V_{LOG}$  and  $V_{WD}$ . Plots 6, 8 and 9 were all tenths rounding errors. All plots have been revised.

#### 6. EPA Comments on Potential Mitigation Site Baselines

Eco-Tech – Mitigation sites will be assessed under a separate memorandum at a later date.

If you have any questions or require additional information, please contact me at (502) 259-0470 or <a href="relation-red">rlarsen@ecotechinc.com</a>.

#### Attachments:

- 1. 2006 and 2017 HGM Variables and Indices
- 2. Pigeon Creek cross-sections
- 3. Pigeon Creek StreamStats Report
- 4. Location Maps
- 5. Field Data Sheets

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 1B (4-05-2017)

### PEM

		2006 -	2006 - Plot 1A		2017 - Plot 1B	
Variables	Units	Measure	Subindex	Measure	Subindex	
1. Vtract	ha	890	0,70	890	0.70	
2. Vcore	%	47	1.00	47	1.00	
3. Vconnect	%	72	1.00	72	1.00	
4. Vslope	%	0.003	1.00	0.03	1.00	
5. Vstore	%	55.6	1,00	85	1.00	
6. Vmacro	no units	6	1.00	6	1.00	
7. Vfreq	years	1	1.00	1	1.00	
8. Vrough	no units	0.23	1.00	0.087	0.86	
9. Vsoilint	%	0	1.00	0	1.00	
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00	
11. Vwtd	inches	1	1.00	1	1.00	
12. Vwtslope	%	26	0.74	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00	
14. Vpore	%	43.5	1.00	43	1.00	
15. Vsurfcon	%	100	0.00	67	0.33	
16. Vclay	%	0	1.00	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	1	1.00	
18. Vtba	m2/ha	0	0.00	0	0.00	
19. Vtden	stems/ha	0	0.00	0	0.00	
20. Vsnag	stems/ha	0	0.00	0	0.00	
21. Vwd	m3/ha	50.3	1.00	0	0.00	
22. Vlog	m3/ha	17.5	1.00	0	0.00	
23. Vssd	stems/ha	1475	0.50	850	0.50	
24. Vgvc	%	85	0.27	97.5	0.13	
25. Vohor	%	76	1.00	45	0.75	
26. Vahor	%	25	0.31	100	1.00	
27. Vcomp	%	75	0.75	33	0.33	

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	0.96
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.51	0.40
Remove and Sequester Elements and Compounds	0.91	0.97
Retain Particulates	1.00	0.96
Export Organic Carbon	0.00	0.46
Maintain Characteristic Plant Community	0.61	0.41
Provide Habitat for Wildlife	0.58	0.37
MEAN	0.69	0.68

Low Gradient Riverine Wetlands in Western Kentucky

# Plot 2 (4-06-2017)

		20	2006		2017	
Variables	Units	Measure	Subindex	Measure	Subindex	
1. Vtract	ha	890	0.70	890	0.70	
2. Vcore	%	47	1.00	47	1.00	
3. Vconnect	%	72	1.00	72	1.00	
4. Vslope	%	0.003	1.00	0.03	1.00	
5. Vstore	%	56.5	1.00	68	1.00	
6. Vmacro	no units	6	1.00	6	1.00	
7. Vfreq	years	1	1.00	1	1.00	
8. Vrough	no units	0.15	1.00	0.187	1.00	
9. Vsoilint	%	0	1.00	0	1.00	
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00	
11. Vwtd	inches	1	1.00	1	1.00	
12. Vwtslope	%	26	0.74	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00	
14. Vpore	%	43.5	1.00	43	1.00	
15. Vsurfcon	%	90	0.10	67	0.33	
16. Vclay	%	0	1.00	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	1	1.00	
18. Vtba	m2/ha	28.5	1.00	10.925	0.55	
19. Vtden	stems/ha	900	0.85	600	1.00	
20. Vsnag	stems/ha	225	0.10	0	0.00	
21. Vwd	m3/ha	29.4	1.00	37.4	1.00	
22. Vlog	m3/ha	35	1.00	29.856	1.00	
23. Vssd	stems/ha	500	1.00	1325	0.50	
24. Vgvc	%	70	0.44	28	0.91	
25. Vohor	%	100	1.00	100	1.00	
26. Vahor	%	71	0.89	100	1.00	
27. Vcomp	%	100	1.00	50	0.50	

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.89	0.83
Remove and Sequester Elements and Compounds	0.99	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.56	0.76
Maintain Characteristic Plant Community	0.98	0.80
Provide Habitat for Wildlife	0.87	0.76
MEAN	0.90	0.88

Low Gradient Riverine Wetlands in Western Kentucky

# Plot 3 (4-06-2017)

		20	2006		2017	
Variables	Units	Measure	Subindex	Measure	Subindex	
1. Vtract	ha	890	0.70	890	0.70	
2. Vcore	%	47	1.00	47	1.00	
3. Vconnect	<b>%</b>	72	1.00	72	1.00	
4. Vslope	%	0.003	1.00	0.03	1.00	
5. Vstore	<b>%</b>	51.6	0.94	64	1.00	
6. Vmacro	no units	6	1.00	6	1.00	
7. Vfreq	years	1	1.00	1	1,00	
8. Vrough	no units	0.16	1.00	0.16	1.00	
9. Vsoilint	%	0	1.00	0	1.00	
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00	
11. Vwtd	inches	1	1.00	1	1.00	
12. Vwtslope	%	26	0.74	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00	
14. Vpore	%	43.5	1.00	43	1.00	
15. Vsurfcon	%	75	0.25	67	0.33	
16. Vclay	%	0	1.00	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	1	1.00	
18. Vtba	m2/ha	40.6	1.00	40.63	1.00	
19. Vtden	stems/ha	525	1.00	700	1.00	
20. Vsnag	stems/ha	50	1.00	100	0.10	
21. Vwd	m3/ha	59.1	0.91	10.3	0.52	
22. Vlog	m3/ha	26.2	1.00	6.2	0.62	
23. Vssd	stems/ha	1500	0.50	250	1.00	
24. Vgvc	%	25	0.94	38	0.80	
25. Vohor	%	100	1.00	95	1.00	
26. Vahor	<b>%</b>	51	0.64	100	1.00	
27. Vcomp	%	56	0.56	33	0.33	

FCI Function	2006	2017
Temporarily Store Surface Water	0.98	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.83	0.89
Remove and Sequester Elements and Compounds	0.95	1.00
Retain Particulates	0.98	1.00
Export Organic Carbon	0.69	0.66
Maintain Characteristic Plant Community	0.88	0.82
Provide Habitat for Wildlife	0.93	0.78
MEAN	0.90	0.88

Low Gradient Riverine Wetlands in Western Kentucky

# Plot 4 (4-06-2017)

		20	2006		2017	
Variables	Units	Measure	Subindex	Measure	Subindex	
1. Vtract	ha	890	0.70	890	0.70	
2. Vcore	%	47	1.00	47	1,00	
3. Vconnect	%	72	1.00	72	1.00	
4. Vslope	%	0.003	1.00	0.03	1.00	
5. Vstore	%	260	1.00	112	1.00	
6. Vmacro	no units	6	1.00	6	1.00	
7. Vfreq	years	1	1.00	1	1.00	
8. Vrough	no units	0.18	1.00	0.145	1.00	
9. Vsoilint	%	0	1.00	0	1,00	
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00	
11. Vwtd	inches	1	1.00	1	1.00	
12. Vwtslope	%	26	0.74	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	0.4	1,00	
14. Vpore	%	43.5	1.00	43	1.00	
15. Vsurfcon	%	50	0.50	67	0.33	
16. Vclay	%	0	1.00	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	1	1.00	
18. Vtba	m2/ha	2.6	0.13	52.08	1.00	
19. Vtden	stems/ha	225	0.56	1125	0.70	
20. Vsnag	stems/ha	0	0.00	50	1.00	
21. Vwd	m3/ha	1.5	0.08	11.1	0.56	
22. Vlog	m3/ha	0	0.00	0	0.00	
23. Vssd	stems/ha	12200	0.50	1250	0.50	
24. Vgvc	%	95	0.16	30	0.89	
25. Vohor	%	95	1.00	81	1.00	
26. Vahor	<b>***</b>	0	0.00	100	1.00	
27. Vcomp	%	83	0.83	83	0.83	

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1,00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.31	0.82
Remove and Sequester Elements and Compounds	0.87	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.62	0.67
Maintain Characteristic Plant Community	0.77	0.92
Provide Habitat for Wildlife	0.62	0.88
MEAN	0.76	0.90

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 5B (4-06-2017)

### PSS

		2006 -	2006 - Plot 5A		2017 - Plot 5B	
Variables	Units	Measure	Subindex	Measure	Subindex	
1. Vtract	ha	890	0.70	890	0.70	
2. Vcore	%	47	1.00	47	1.00	
3. Vconnect	%	72	1.00	72	1.00	
4. Vslope	%	0.003	1.00	0.03	1.00	
5. Vstore	%	312.5	1.00	95	1.00	
6. Vmacro	no units	6	1.00	6	1.00	
7. Vfreq	years	1	1,00	1	1.00	
8. Vrough	no units	0.2	1.00	0.165	1.00	
9. Vsoilint	%	0	1.00	0	1.00	
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00	
11. Vwtd	inches	1	1.00	1	1.00	
12. Vwtslope	%	26	0.74	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00	
14. Vpore	%	43.5	1.00	43	1.00	
15. Vsurfcon	%	75	0.25	67	0.33	
16. Vclay	%	0	1.00	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	1	1,00	
18. Vtba	m2/ha	6.4	0.32	12.77	0.64	
19. Vtden	stems/ha	150	0.38	925	0.81	
20. Vsnag	stems/ha	225	0.10	0	0.00	
21. Vwd	m3/ha	42.1	1.00	23.6	1.00	
22. Vlog	m3/ha	35	1.00	17.354	1.00	
23. Vssd	stems/ha	4725	0.50	3500	0.50	
24. Vgvc	%	88	0.24	7.5	1.00	
25. Vohor	%	100	1.00	100	1.00	
26. Vahor	%	56	0.70	100	1.00	
27. Vcomp	%	44	0.44	67	0.67	

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.63	0.86
Remove and Sequester Elements and Compounds	0.96	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.71	0.76
Maintain Characteristic Plant Community	0.63	0.84
Provide Habitat for Wildlife	0.65	0.77
MEAN	0.81	0.89

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 6 (4-06-2017)

		20	2006		17
Variables	Units	Measure	Subindex	Measure	Subindex
1. Vtract	ha	890	0.70	890	0.70
2. Vcore	%	47	1.00	47	1.00
3. Vconnect	%	72	1.00	72	1.00
4. Vslope	%	0.003	1.00	0.03	1.00
5. Vstore	%	88.2	1.00	60	1.00
6. Vmacro	no units	6	1.00	6	1.00
7. Vfreq	years	1	1.00	1	1.00
8. Vrough	no units	0.17	1.00	0.165	1.00
9. Vsoilint	%	0	1.00	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00
11. Vwtd	inches	1	1.00	1	1.00
12. Vwtslope	%	26	0.74	38	0.62
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00
14. Vpore	%	43.5	1.00	43	1.00
15. Vsurfcon	%	100	0.00	67	0.33
16. Vclay	%	0	1.00	0	1.00
17. Vredox	p(1) / a(0)	1	1.00	1	1.00
18. Vtba	m2/ha	49.5	1.00	39.07	1.00
19. Vtden	stems/ha	550	1.00	675	1.00
20. Vsnag	stems/ha	225	0.10	50	1.00
21. Vwd	m3/ha	58.7	0.91	85.8	0.64
22. Vlog	m3/ha	8.7	0.87	80.8	0.80
23. Vssd	stems/ha	575	0.85	450	1.00
24. Vgvc	%	47	0.70	11.3	1.00
25. Vohor	%	98	1.00	83.8	1.00
26. Vahor	%	81	1.00	100	1.00
27. Vcomp	%	33	0.33	44.3	0.44

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.91	0.94
Remove and Sequester Elements and Compounds	1.00	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.00	0.69
Maintain Characteristic Plant Community	0.82	0.85
Provide Habitat for Wildlife	0.80	0.91
MEAN	0.81	0.91

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 7B (4-06-2017)

### PSS

		2006 -	Plot 7A	2017 -	Plot 7B
Variables	Units	Measure	Subindex	Measure	Subindex
1. Vtract	ha	890	0.70	890	0.70
2. Vcore	%	47	1.00	47	1.00
3. Vconnect	%	72	1.00	72	1.00
4. Vslope	%	0.003	1.00	0.03	1.00
5. Vstore	%	377.8	1.00	67	1.00
6. Vmacro	no units	6	1.00	6	1.00
7. Vfreq	years	1	1.00	1	1.00
8. Vrough	no units	0.19	1.00	0.132	1.00
9. Vsoilint	%	0	1.00	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00
11. Vwtd	inches	1	1.00	1	1.00
12. Vwtslope	%	26	0.74	38	0.62
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00
14. Vpore	%	43.5	1.00	43	1.00
15. Vsurfcon	%	100	0.00	67	0.33
16. Vclay	%	0	1.00	0	1.00
17. Vredox	p(1) / a(0)	1	1.00	1	1.00
18. Vtba	m2/ha	1.9	0.10	1.2	0.06
19. Vtden	stems/ha	125	0.31	25	0.06
20. Vsnag	stems/ha	50	1.00	0	0.00
21. Vwd	m3/ha	17.3	0.87	0	0.00
22. Vlog	m3/ha	8.7	0.87	0	0.00
23. Vssd	stems/ha	950	0.50	575	0.85
24. Vgvc	%	90	0.21	72	0.42
25. Vohor	%	84	1.00	100	1.00
26. Vahor	<b>%</b>	31	0.39	100	1.00
27. Vcomp	%	67	0.67	33	0.33

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.51	0.55
Remove and Sequester Elements and Compounds	0.92	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.00	0.54
Maintain Characteristic Plant Community	0.66	0.44
Provide Habitat for Wildlife	0.76	0.43
MEAN	0.72	0.73

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 8 (4-07-2017)

### PSS

		20	)06	20	)17
Variables	Units	Measure	Subindex	Measure	Subindex
1. Vtract	ha	890	0,70	890	0.70
2. Vcore	%	47	1,00	47	1.00
3. Vconnect	%	72	1.00	72	1.00
4. Vslope	%	0.003	1.00	0.03	1.00
5. Vstore	%	53.2	0.97	63	1.00
6. Vmacro	no units	6	1.00	6	1.00
7. Vfreq	years	1	1.00	1	1.00
8. Vrough	no units	0.18	1.00	0.095	0.91
9. Vsoilint	%	0	1.00	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00
11. Vwtd	inches	1	1.00	1	1.00
12. Vwtslope	%	26	0.74	38	0.62
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00
14. Vpore	%	43.5	1.00	43	1.00
15. Vsurfcon	%	100	0.00	67	0.33
16. Vclay	%	0	1.00	0	1.00
17. Vredox	p(1) / a(0)	Company of the Compan	1.00	1	1.00
18. Vtba	m2/ha	0	0.00	0	0.00
19. Vtden	stems/ha	0	0.00	0	0.00
20. Vsnag	stems/ha	2500	0.10	0	0.00
21. Vwd	m3/ha	0	0.00	9.5	0.48
22. Vlog	m3/ha	0	0.00	9.5	0.95
23. Vssd	stems/ha	60000	0.50	10000	0.50
24. Vgvc	%	5	1.00	0	1.00
25. Vohor	%	100	1.00	100	1.00
26. Vahor	%	0	0.00	100	1.00
27. Vcomp	%	0	0.00	0	0.00

FCI Function	2006	2017
Temporarily Store Surface Water	0.99	0.98
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.42	0.66
Remove and Sequester Elements and Compounds	0.87	1.00
Retain Particulates	0.99	0.98
Export Organic Carbon	0.00	0.65
Maintain Characteristic Plant Community	0.00	0.00
Provide Habitat for Wildlife	0.34	0.43
MEAN	0.57	0.70

Low Gradient Riverine Wetlands in Western Kentucky

### Plot 9 (4-07-2017)

		20	)06	20	)17
Variables	Units	Measure	Subindex	Measure	Subindex
1. Vtract	ha	890	0.70	890	0.70
2. Vcore	%	47	1.00	47	1.00
3. Vconnect	%	72	1.00	72	1.00
4. Vslope	%	0.003	1.00	0.03	1.00
5. Vstore	%	55	1.00	63	1.00
6. Vmacro	no units	6	1.00	6	1.00
7. Vfreq	years	1	1.00	1	1.00
8. Vrough	no units	0.19	1.00	0.145	1.00
9. Vsoilint	%	0	1.00	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00	1	1.00
11. Vwtd	inches	1	1.00	1	1.00
12. Vwtslope	%	26	0.74	38	0.62
13. Vsoilperm	in/hr	0.4	1.00	0.4	1.00
14. Vpore	%	43.5	1.00	43	1.00
15. Vsurfcon	%	100	0.00	67	0.33
16. Vclay	%	0	1.00	0	1.00
17. Vredox	p(1) / a(0)	1	1.00	1	1.00
18. Vtba	m2/ha	15.3	0.77	32.1	1.00
19. Vtden	stems/ha	600	1.00	750	1.00
20. Vsnag	stems/ha	250	0.10	25	0.83
21. Vwd	m3/ha	45.9	1.00	32.4	1.00
22. Vlog	m3/ha	17.5	1.00	24.1	1.00
23. Vssd	stems/ha	700	0.60	375	1.00
24. Vgvc	%	40	0.78	46	0.71
25. Vohor	%	84	1.00	97.5	1.00
26. Vahor	%	75	0.94	100	1.00
27. Vcomp	%	83	0.83	100	1.00

FCI Function	2006	2017
Temporarily Store Surface Water	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89
Cycle Nutrients	0.85	0.95
Remove and Sequester Elements and Compounds	0.99	1.00
Retain Particulates	1.00	1.00
Export Organic Carbon	0.00	0.76
Maintain Characteristic Plant Community	0.93	1.00
Provide Habitat for Wildlife	0.84	0.96
MEAN	0.82	0.95

Low Gradient Riverine Wetlands in Western Kentucky

# Plot 10 (4-14-2017)

		2017		
Variables	Units	Measure	Subindex	
1. Vtract	ha	890	0.70	
2. Vcore	%	47	1.00	
3. Vconnect	%	72	1.00	
4. Vslope	%	0.03	1.00	
5. Vstore	%	114	1.00	
6. Vmacro	no units	6	1.00	
7. Vfreq	years	1	1.00	
8. Vrough	no units	0.145	1.00	
9. Vsoilint	%	0	1.00	
10. Vwtf	p(1) / a(0)	1	1.00	
11. Vwtd	inches	1	1.00	
12. Vwtslope	%	38	0.62	
13. Vsoilperm	in/hr	0.4	1.00	
14. Vpore	%	43	1.00	
15. Vsurfcon	%	67	0.33	
16. Vclay	%	0	1.00	
17. Vredox	p(1) / a(0)	1	1.00	
18. Vtba	m2/ha	34.7	1.00	
19. Vtden	stems/ha	275	0.69	
20. Vsnag	stems/ha	0	0.00	
21. Vwd	m3/ha	25.5	1.00	
22. Vlog	m3/ha	6.06	0.61	
23. Vssd	stems/ha	875	0.50	
24. Vgvc	%	19	1.00	
25. Vohor	%	96	1.00	
26. Vahor	%	100	1.00	
27. Vcomp	%	78	0.78	

FCI Function	2017
Temporarily Store Surface Water	1.00
Maintain Characteristic Subsurface Hydrology	0.89
Cycle Nutrients	0.92
Remove and Sequester Elements and Compounds	1.00
Retain Particulates	1.00
Export Organic Carbon	0.76
Maintain Characteristic Plant Community	0.90
Provide Habitat for Wildlife	0.79
MEAN	0.91

Low Gradient Riverine Wetlands in Western Kentucky

# Plot 11 (4-14-2017)

		2017	
Variables	Units	Measure	Subindex
1. Vtract	ha	890	0.70
2. Vcore	%	47	1.00
3. Vconnect	%	72	1.00
4. Vslope	%	0.03	1.00
5. Vstore	%	114	1.00
6. Vmacro	no units	6	1.00
7. Vfreq	years	1	1.00
8. Vrough	no units	0.145	1.00
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	1	1.00
12. Vwtslope	%	38	0.62
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	67	0.33
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	40.25	1.00
19. Vtden	stems/ha	425	1.00
20. Vsnag	stems/ha	25	0.83
21. Vwd	m3/ha	19.8	0.99
22. Vlog	m3/ha	5.9	0.59
23. Vssd	stems/ha	950	0.50
24. Vgvc	%	20	1.00
25. Vohor	%	98.8	1.00
26. Vahor	%	100	1.00
27. Vcomp	%	33.3	0.33

FCI Function	2017
Temporarily Store Surface Water	1.00
Maintain Characteristic Subsurface Hydrology	0.89
Cycle Nutrients	0.92
Remove and Sequester Elements and Compounds	1.00
Retain Particulates	1.00
Export Organic Carbon	0.76
Maintain Characteristic Plant Community	0.82
Provide Habitat for Wildlife	0.87
MEAN	0.91

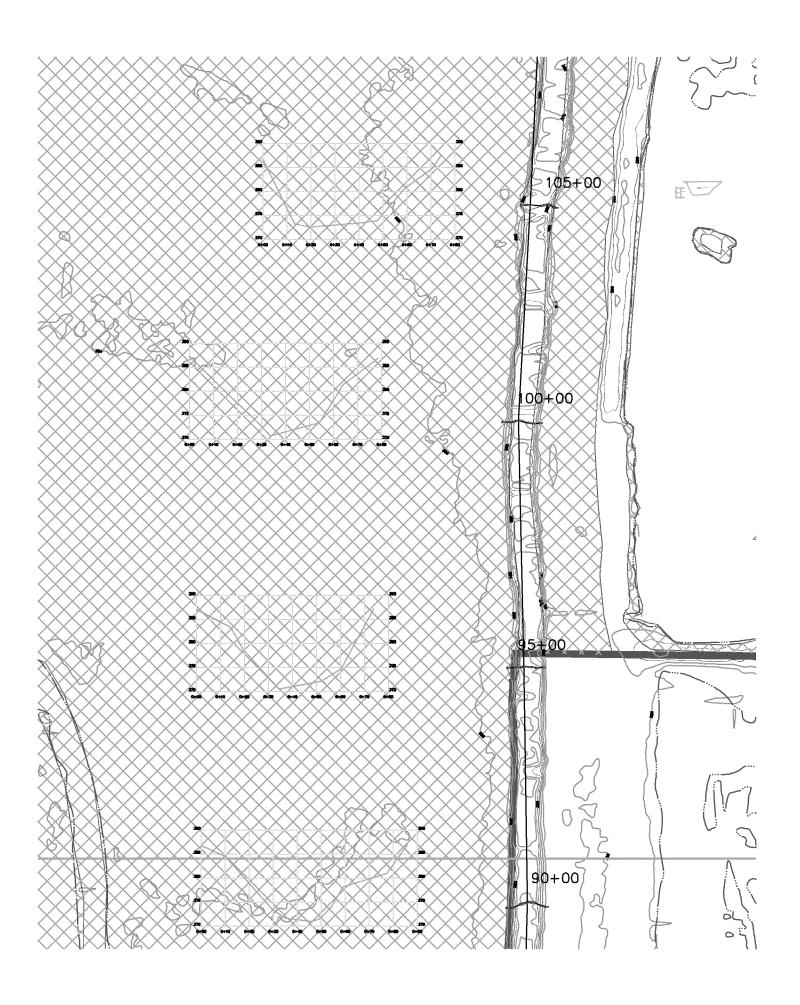
Table 1. Functional Capacity Index scores for the Seven Hills Permit Area (May 2017)

FCI Functions	1A - PEM	1B - PEM	2-	PFO	3 -	PFO	4 -	PFO	5A - PSS	5B - PSS
FCI Functions	2006	2017	2006	2017	2006	2017	2006	2017	2006	2017
Temporarily Store Surface Water	1.00	0.96	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89	0.93	0.89	0.93	0.89	0.93	0.89	0.93	0.89
Cycle Nutrients	0.51	0.40	0.89	0.83	0.83	0.89	0.31	0.82	0.63	0.86
Remove and Sequester Elements and Compounds	0.91	0.97	0.99	1.00	0.95	1.00	0.87	1.00	0.96	1.00
Retain Particulates	1.00	0.96	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
Export Organic Carbon	0.00	0.46	0.56	0.76	0.69	0.66	0.62	0.67	0.71	0.76
Maintain Characteristic Plant Community	0.61	0.41	0.98	0.80	0.88	0.82	0.77	0.92	0.63	0.84
Provide Habitat for Wildlife	0.58	0.37	0.87	0.76	0.93	0.78	0.62	0.88	0.65	0.77
MEAN	0.69	0.68	0.90	0.88	0.90	0.88	0.76	0.90	0.81	0.89

FCI Functions	6 -	PFO	7A - PSS	7B - PSS	8 -	PSS	9 -	PFO	*10 - PFO	*11 - PFO
FCI Functions	2006	2017	2006	2017	2006	2017	2006	2017	2017	2017
Temporarily Store Surface Water	1.00	1.00	1.00	1.00	0.99	0.98	1.00	1.00	1.00	1.00
Maintain Characteristic Subsurface Hydrology	0.93	0.89	0.93	0.89	0.93	0.89	0.93	0.89	0.89	0.89
Cycle Nutrients	0.91	0.94	0.51	0.55	0.42	0.66	0.85	0.95	0.92	0.92
Remove and Sequester Elements and Compounds	1.00	1.00	0.92	1.00	0.87	1.00	0.99	1.00	1.00	1.00
Retain Particulates	1.00	1.00	1.00	1.00	0.99	0.98	1.00	1.00	1.00	1.00
Export Organic Carbon	0.00	0.69	0.00	0.54	0.00	0.65	0.00	0.76	0.76	0.76
Maintain Characteristic Plant Community	0.82	0.85	0.66	0.44	0.00	0.00	0.93	1.00	0.90	0.82
Provide Habitat for Wildlife	0.80	0.91	0.76	0.43	0.34	0.43	0.84	0.96	0.79	0.87
MEAN	0.81	0.91	0.72	0.73	0.57	0.70	0.82	0.95	0.91	0.91

Aggregate Mean Index 2006	0.776
Aggregate Mean Index 2017	0.834
Difference	0.058
Percent Change	7.5%

 $<sup>\</sup>mbox{*}$  - Additional 2017 HGM plot assessed in estimated 80+ year old forest community.



#### **StreamStats Report**

Region ID:

IN

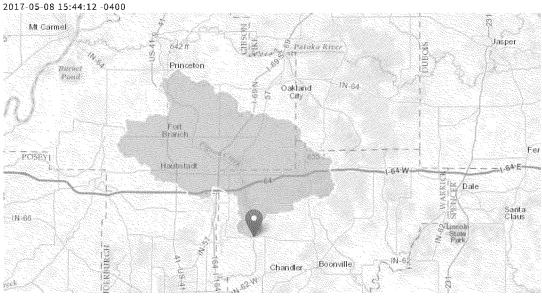
Workspace∕ID:

IN20170508134044798000

Clicked Point (Latitude, Longitude):

38.09658, -87.39925

Time:



Basin	Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	207.85	square miles
BFREGNO		1567	

Bankfull Statistics Parameters [100 Percent (208 square miles) Bankfull South Hills and Lowlands Region 2013 5078]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit	
DRNAREA	Drainage Area	207.85	square miles	0.06	186	
BFREGNO	BFREGNO	1567	dimensionless			

Bankfull Statistics Disclaimers [100 Percent (208 square miles) Bankfull South Hills and Lowlands Region 2013 5078]

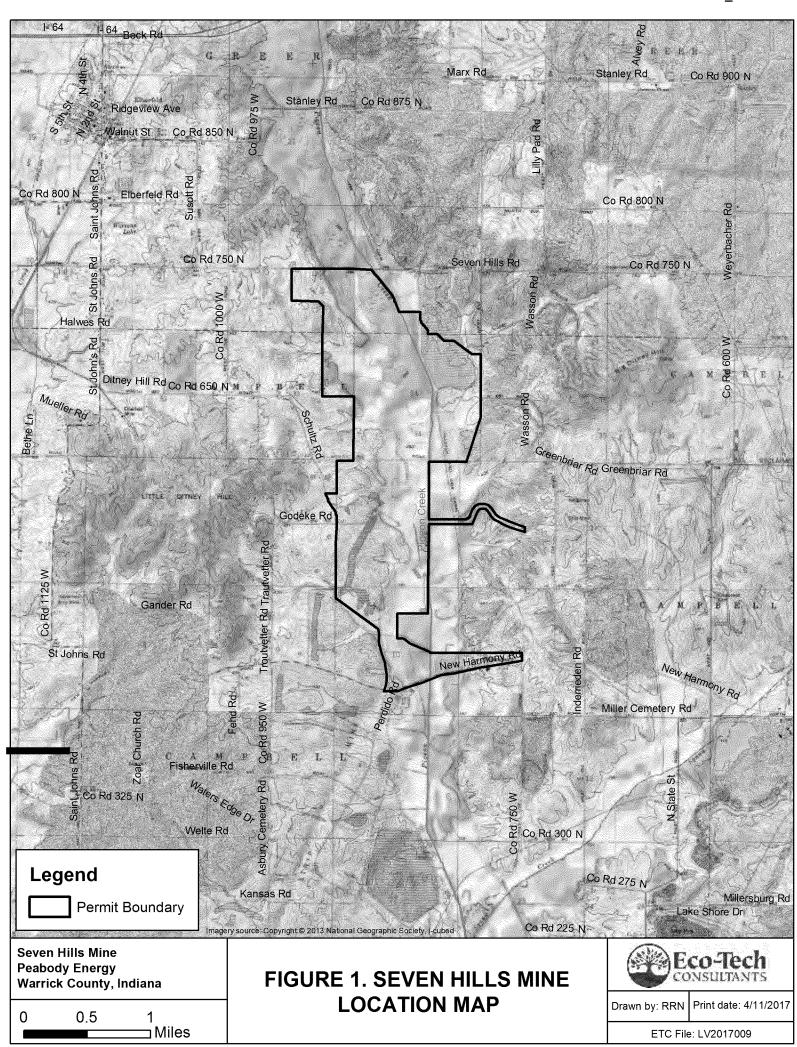
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

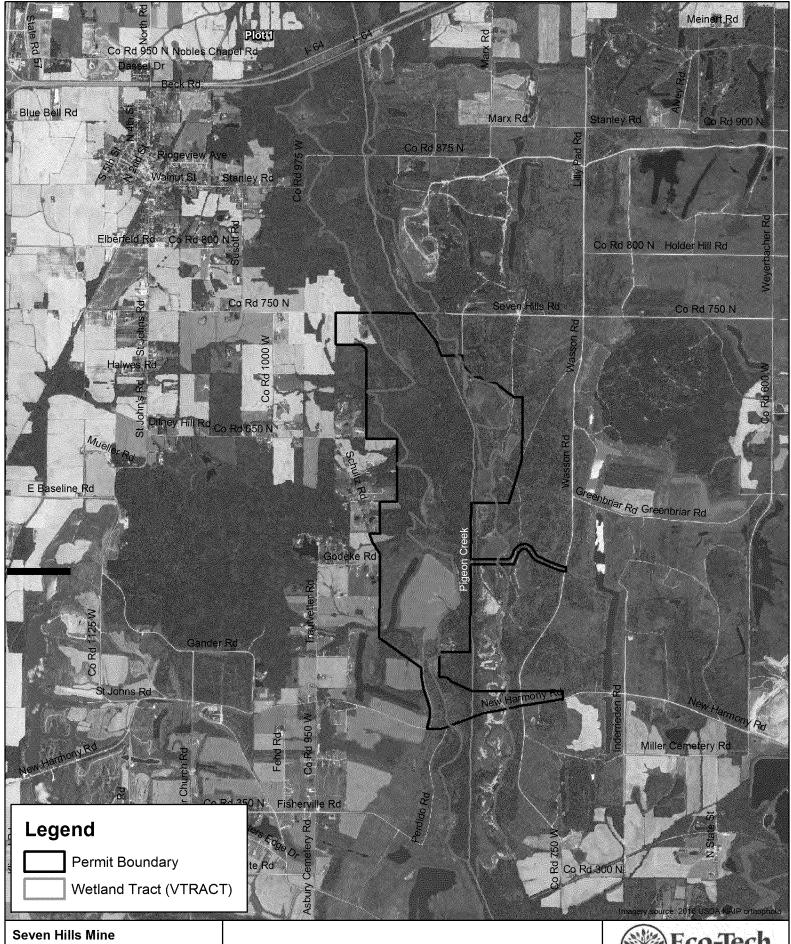
Bankfull Statistics Flow Report [100 Percent (208 square miles) Bankfull South Hills and Lowlands Region 2013 5078]

Statistic	Value	Unit
Bankfull Width	125	ft
Bankfull Depth	5.05	ft
Bankfull Area	619	ft^2

#### **Bankfull Statistics Citations**

Robinson, B.A., 2013, Regional bankfull-channel dimensions of non-urban wadeable streams in Indiana: U.S. Geological Survey, Scientific Investigations Report 2013-5078, 33 p. (http://pubs.usgs.gov/sir/2013/5078/)





Peabody Energy
Warrick County, Indiana

0 2,050 4,100 Feet

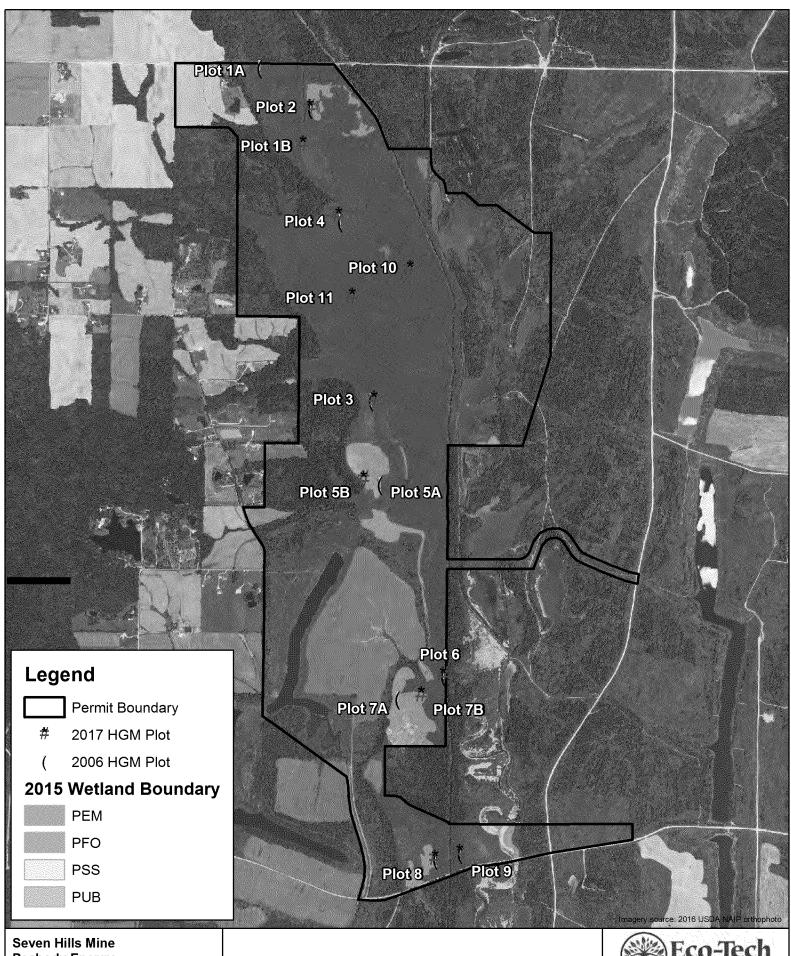
FIGURE 2. LOCATION OF HGM VTRACT



Drawn by: RRN

Print date: 5/12/2017

ETC File: LV2017009



**Peabody Energy** Warrick County, Indiana

> 1,000 2,000 ⊐ Feet

FIGURE 3. LOCATION OF HGM **ASSESSMENT SITES** 



Drawn by: RRN

Print date: 5/12/2017

ETC File: LV2017009

PEN

# Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessme Project N	nt Team : ame/Location:	HIEAV	PUTTE		Date: 4-6-	201
Sample va	riables 1-6 usin	g aerial photos, to	pographic maps,	scenic overlooks	, local informants	, etc.
1. $V_{TRACT}$	Area of wetlar	d that is contiguous	with the WAA a	nd of the same su	bclass <u>B</u>	90 <u>)</u> ha
$2. \ V_{CORE}$	Percent of wet	land tract that is >3	00 m from unsuit	able habitat	· · · · · · · · · · <u>4</u>	<u> </u>
3. V <sub>CONNEC</sub>		nt of wetland tract p				
4. $V_{SLOPE}$	Percent floodp	lain slope	6 : 17,525	V4 = 0.03	<u>O</u> .	<u>03</u> %
5. V <sub>STORE</sub>	Floodplain wid	Ith to channel width	ratio4786)	/so	<u> </u>	5
6. V <sub>MACRO</sub>	Percent of WA	A covered with ma	crotopographic fe	atures		<u></u> %
Sample va	riables 7-17 bas	ed on a walking r	econnaissance of	the WAA		
7. $V_{FREQ}$	Check data sor	d recurrence interva irce: gage data / , l curve, hydrologi	ocal knowledge չ	/, flood frequency	curves, region	_ years aal
8. V <sub>ROUGH</sub>	Roughness Co	efficient $6.03$ $(n_{\rm BASE})$	$)+_{*}\underline{n_{OPO}}(n_{TOPO})+$	1002 (n <sub>OBS</sub> ) + 105	$(n_{\text{VEG}}) = \dots$	0.08
9. V <sub>SOILINT</sub>	Percent of WA	A with altered soils				<u>0                                    </u>
10. V <sub>WTF</sub>		ctuation is (check ource: groundwater w				у
11. $V_{WTD}$	and the second of the second o	pth isurce: groundwater w	化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	phic features, <u>/</u> (		inches y <u>√</u> .
12. $V_{WTSLO}$	PE Percent of	WAA with an alter	ed water table slop	pe		8_%
13. $V_{SOILPE}$	RM Soil perme	ability		*****	<u>0.4</u> (	in./hr)
14. $V_{\it PORE}$	Percent effective	e soil porosity	*****	****	4	<u>3</u> %
15. V <sub>SURFC</sub>	ON Percent of	adjacent stream rea	ch with altered su		A Committee of the Comm	1 %
		A with altered clay	50% 0	111	····///	<u></u> %
17. $V_{REDOX}$	Redoximorphic	features are (check	one):	prese	nt <u> </u>	

	circ	cular pl	riables 18-20 from a representative number of locations in the WAA using a 0.04 ha ot (11.3 m (37 ft) radius)
o. oy ha	18.	$V_{TBA}$	Tree basal area (average of 0.04 ha plot values on next line)
glot sorvied of	19.	$V_{TDEN}$	Number of tree stems (average of 0.04 ha plot values on next line)
	20.	$V_{SNAG}$	Number of snags (average of 0.04 ha plot values on next line)
	San	nple va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
2-15 m ranseuts sounded	21.	$V_{WD}$	Volume of woody debris (average of transect values on next line)
Low from	22.	$V_{LOG}$	Volume of logs (average of transect values on next line)
			riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
0.04 kg	23.	$V_{SSD}$	Number of woody understory stems (average of 0.04 ha plot values on next line)
		aple var 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of plot
	24.	$V_{GVC}$	Average cover of ground vegetation (average of 0.04 ha plot values on next line) $97.5\%$ % Average of 0.04 ha plots sampled: $1.95\%$ % $2.16\%$ % $3.95\%$ % $4.16\%$ %
	25.	$V_{OHOR}$	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26,	$V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
			Average of 0.04 ha plots sampled: 1.23 0/2 0/3 0/4 0/6
·0.04 No.		1.15mg1	
10th Troo	ske.	10	
N INZ Pl	,	New Ark	fort.
Plot Souphing For Trace  For or			

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and the second second to the second second second		Note that the second of the se		
Plot Worksheet:	** ** ** ** ** ** ** ** ** ** ** ** **	THE RESERVE OF THE PARTY OF THE	The state of the s	and the same of th
PIOT MODELCHOOF	TOTAL BUTCHER	Education of the company	market was the market	1/
LIUL TYUE RAHCCI.	HARVY STRAINSTRA	EXTRACTERED VVC-1811	THE S IN VVICTO	"
~ ~~~	MANUAL TO THE RESERVE AND AREA	ALAT WARRE TT WELL	LARLE OF THE CANAL	

Dagged dlale (	(aux) - 6 tu 1						nte : <u>4-6-2</u>
um resulting	yalues in sha	aded colum	pelow, square db ns (m²/0.04 ha).	Record in 1	), multiply $8.\ V_{TBA}$ , mu	result by 0.06 ltiply by 25 (	00079 (m²), an m²/ha).
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)
101	40						
***************************************							
					***************************************		
	um of values						
$V_{TDEN}$ T $V_{SNAG}$ T $V_{Q2}$ $V_{WD}$ $V_{CORD}$ number $V_{CORD}$	otal number of otal number of otal number of otal number of stems in ransect 1	of tree stem of snag ster Size Class Tra	ns from above = 1 (0.6-2.5 cm / 0	(stems).25-1 in) alo	ms/0.04 ha) × ong a 6 ft sec	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Tran	stems/ha stems/ha sect 1 and 2
$V_{TDEN}$ T $V_{SNAG}$ T $V_{SNAG}$ T $V_{SNAG}$ T $V_{SNAG}$ T $V_{SNAG}$ T	otal number of the control of the co	of tree stem of snag ster Size Class Tra acre = 0.18	is from above = 1 (0.6-2.5 cm / 0.6-2.5 cm /	(stems).25-1 in) alo	ms/0.04 ha) × ong a 6 ft secer of stems =	$\times 25 = \frac{0}{25}$ $25 = \frac{0}{25}$ etion of Tran	stems/ha stems/ha sect 1 and 2
V <sub>TDEN</sub> T V <sub>SNAG</sub> T Cord number T Size (	Total number of total number of total number of stems in ransect 1 (Class 1 tons / cer of stems in	of tree stem of snag ster Size Class Tra acre = 0.18 Size Class	1 (0.6-2.5 cm / 0.6-2.5 cm / 0.	(stems)  0.25-1 in) alo  Total number of stems = 1-3 in) along	ms/0.04 ha) × s/0.04 ha) × ong a 6 ft secer of stems = g 12 ft section	$\times 25 = \frac{0}{25}$ $25 = \frac{0}{25}$ $25 = \frac{0}{25}$ $25 = \frac{0}{0}$	stems/ha stems/ha sect 1 and 2
V <sub>TDEN</sub> T V <sub>SNAG</sub> T Cord number T Size ( cord number T Size (	otal number of the control of the co	Size Class Tranacre = 0.18 Size Class Tranacre = 0.89	1 (0.6-2.5 cm / 0.6-2.5 cm / 0.	(stems)  0.25-1 in) alo  Total number of stems = 1-3 in) along Total number of stems = 1-3 in	ms/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ ection of Transection of Transection	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre
V <sub>TDEN</sub> T V <sub>SNAG</sub> T (22. V <sub>WD</sub> /) cord number T Size ( cord number T Size ( cord diameter)	Total number of the control of the c	Size Class Tra acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0 ns from above= 1 (0.6-2.5 cm / 0 nsect 2	(stems)  (st	ms/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ ection of Transection of Transection	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre
V <sub>TDEN</sub> T V <sub>SNAG</sub> T Cord number T Size Cord number T Size Cord diametr	Total number of the control of the c	Size Class Tranacre = 0.18 Size Class Tranacre = 0.89	1 (0.6-2.5 cm / 0)  1 (0.6-2.5 cm / 0)  1 (0.6-2.5 cm / 0)  2 × total number  2 (2.5 - 7.6 cm / 0)  2 × total number  3 3 (> 7.6 cm / >  Transect	(stems)  0.25-1 in) alo  Total number of stems = 1-3 in) along Total number of stems = 3 in) along 5  2 diameter	ms/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Transecon of Tr	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre
V <sub>TDEN</sub> T V <sub>SNAG</sub> T (22. V <sub>WD</sub> /) cord number T Size ( cord number T Size ( cord diametric Transect 1 Stem 1 =	Total number of the control of the c	Size Class Tra acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0.6-2.5 cm / 0.	(stems) (stems	ms/0.04 ha) × s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section for of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Transecon of Tr	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre tons/acre
$V_{TDEN}$ T $V_{SNAG}$ T $V_{SNAG}$ T  Size (  cord number  Size (  cord diameter $V_{TDEN}$ T  Size ( $V_{SNAG}$ T  Size ( $V_{SNAG}$ T	Total number of the control of the c	Size Class Tra acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0.6-2.5 cm / 0.	(stems) (stems	ms/0.04 ha) × s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section for of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Transecon of Tr	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre tons/acre
V <sub>SNAG</sub> T  V <sub>SNAG</sub> T  V <sub>SNAG</sub> T  V <sub>SNAG</sub> T  Size (  cord number  T  Size (  cord diametric to the cord	Total number of the control of the c	Size Class Tra acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0 nsect 2	(stems)  (st	ms/0.04 ha) × s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section for of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Transecon of Tr	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre tons/acre
P. $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SIZE}$ (excord number of $V_{SIZE}$ (excord diameter $V_{SIZE}$ (excord diameter $V_{SIZE}$ ) Stem 1 = $V_{SIZE}$ Stem 2 =	Total number of the color of stems in ransect 1 (Class 2 tons / ter of stems in diameter (Class 2 tons / ter of stems in	Size Class Tra acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0.6-2.5 cm / 0.	(stems)  (st	ms/0.04 ha) × s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section for of stems =	$\times 25 = \frac{0}{0}$ $25 = \frac{0}{0}$ etion of Transecon of Tr	stems/ha stems/ha sect 1 and 2 tons/acre and 2 tons/acre

PLOT B

	/acre × 0.069		
<b>i.</b> $V_{SSD}$ Tally woody unde	and the second of the second o		
AMPLE Subplot 1 1111	rstory stems two 0.004 ha subplots the	in average and multiply by 250: $ge \frac{34}{50} \times 250 = \frac{850}{50}$ stems/ha	
1. $V_{GVC}$ Estimate percent c $1 \underline{95}$ % $2 \underline{100}$	11 over of ground vegetation in four m <sup>2</sup> so % 3 <u>95</u> % 4 <u>100</u> %	ubplots then average: Average <u>¶ 6</u> %	
i. $V_{OHOR}$ Estimate percent c	over of "O" Horizon in four m <sup>2</sup> subplo	ts then average:	
1 <u>50</u> % 2 <u>75</u>	over of "O" Horizon in four m <sup>2</sup> subplo $-\%$ 3 $\frac{15}{9}$ % 4 $\frac{40}{9}$ %	Average <u>45</u> %	
V Estimate nercent c	over of "A" Horizon in four m² subplo	ts then average:	
1 100% 2 100	over of "A" Horizon in four m² subplo 2 % 3 100 % 4 100 %	Average <u>(W</u> %	
. $V_{COMP}$ Determine percent	concurrence with each strata using the ub/Sapling = $ \underline{00} $ % Ground Vegetation	table below $\Omega = \Omega$ % Average $\frac{32}{3}$ %	
$1 \text{ ree} = \sqrt{2} \% \text{ Snr}$	ub/Sapling = 100 % Ground vegetation	011 - 0 % Average 00 /6	
Dominant Species b	by Strata in Western Kentucky Low Gr	adient Riverine Wetlands	
Tree	Shrub/Sapling	Ground Vegetation	
lcer rubrum	Acer rubrum	Arundinaria gigantea	
Betula nigra	Betula nigra	Aster sp. 15/20/30/30	
Carya laciniosa	Carya laciniosa	Boehmaria dylindrica	
Celtis laevigata	Carpinus caroliniana	Campsis radicans	
raxinus pennsylvanica	Celtis laevigata	Carex squarosa	
iquidambar styraciflua	Celtis occidentalis	Eragrostis alba	
- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Fraxinus pennsylvanica 🗷 ::	Glyceria striata	
Duercus pagodifolia			
	Ilex decidua	Hypericum sp.	
Quercus phellos	Ilex decidua	Hypericum sp. Impatiens capensis	
Juercus phellos Juercus lyrata	Ilex decidua Liquidambar styraciflua	Impatiens capensis	
Duercus phellos Duercus lyrata Duercus imbricaria	Ilex decidua	Impatiens capensis Panicum sp.	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria	Impatiens capensis Panicum sp. Parthenocissus quinquefolia	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis Salix nigra	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia Sparganium sp.	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia Sparganium sp. Toxicodendron radicans	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis Salix nigra Ulmus americana	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia Sparganium sp. Toxicodendron radicans	
Quercus pagodifolia Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris alix nigra	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis Salix nigra Ulmus americana	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia Sparganium sp. Toxicodendron radicans	
Quercus phellos Quercus lyrata Quercus imbricaria Quercus michauxii Quercus stellata Quercus palustris	Ilex decidua Liquidambar styraciflua Nyssa sylvatica Quercus imbricaria Quercus lyrata Quercus phellos Quercus palustris Quercus pagodifolia Quercus stellata Platanus occidentalis Salix nigra	Impatiens capensis Panicum sp. Parthenocissus quinquefolia Pilea pumila Quercus phellos Salix nigra Sauraurus cernuus Smilacina racemosa Smilax rotundifolia Sparganium sp. Toxicodendron radicans	

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# Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

	nt Team : ame/Location:	THILLS	PLOT 2	Date: 4-	5-2017
Sample va	riables 1-6 using	aerial photos, top	ographic maps, sce	nic overlooks, local inforn	ants, etc.
1. $V_{TRACT}$				of the same subclass	
$2. \ V_{CORE}$	Percent of wetla	nd tract that is >30	00 m from unsuitable	habitat	<u>47</u> %
3. V <sub>CONNEC</sub>	T Percent	of wetland tract pe	erimeter that is "conr	nected" to suitable habitat.	. <u>Il</u> %
4. $V_{SLOPE}$	Percent floodplai	in slope	area e descripto e a la composição de la c		. <u>0103</u> %
5. $V_{STORE}$	Floodplain width	to channel width	ratio3.4.12/	50	. <u>68</u>
6. V <sub>MACRO</sub>	Percent of WAA	covered with mac	rotopographic featur	es	. <u>6</u> %
Sample va	riables 7-17 based	l on a walking red	connaissance of the	WAA	
7. $V_{FREQ}$	Check data source	ecurrence interval e: gage data, lo rve, hydrologic	cal knowledge <u>/</u> , fl modeling, other	ood frequency curves, re	/ years
8. $V_{ROUGH}$	Roughness Coeff	icient $\frac{O_1O^2}{n_{BASE}}$	$+105(n_{\text{TOPO}}) + 100$	$(n_{\text{OBS}}) + 15(n_{\text{VEG}}) = \dots$	0.187
9. V <sub>SOILINT</sub>	Percent of WAA	with altered soils	e die karana dia kanana dia ka	ing panggang mengerapan nganggan	<u>O</u> %,
10. V <sub>WTF</sub>	Water table flucti Check data source	nation is (check on e: groundwater we	e):	present abs features, County Soil So	ent urvey
11. $V_{WTD}$	Water table depth Check data source	ise: groundwater we	ll,redoximorphic	features, ∠County Soil Si	inches urvey
12. $V_{WTSLOP}$	E Percent of W	AA with an altered	l water table slope		38%
13. $V_{SOILPER}$	M Soil permeabi	lity	ing a season of the season of the	<u>O</u>	<u> </u>
14. $V_{PORE}$	Percent effective s	soil porosity		इ.स.च्याचे स्थापके स्थापके स्थापके के स्थापके के स्थापके के स्थापके स्थापके स्थापके स्थापके स्थापके स्थापके स्	<u>43</u> %
15. V <sub>SURFCO</sub>	N Percent of adj	acent stream reach	ı with altered surface	connections	<u>67</u> %
16. $V_{CLAY}$	Percent of WAA	with altered clay co	ontent in soil profile	SILTY CLAY	%
17. $V_{REDOX}$	Redoximorphic fe	atures are (check o	one):	abso	ent

PLOTZ

		riables 18-20 from a representative number of locations in the WAA using a 0.04 ha
	circular p	lot (11.3 m (37 ft) radius)  The best area (sverage of 0.04 he plot values on next line)  m²/ha
,04 MG	18. $V_{TBA}$	Tree basal area (average of 0.04 ha plot values on next line)
100 J	19. $V_{TDEN}$	Number of tree stems (average of 0.04 ha plot values on next line)
	20. $V_{SNAG}$	Number of snags (average of 0.04 ha plot values on next line)
	Sample va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
ser S	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line)
unself (	22. $V_{LOG}$	Volume of logs (average of transect values on next line)
		riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
0.04 hm	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)  0.04 ha plots: 1 375 stems/ha 2 stem/ha 3 stems/ha 4 stems/ha
	Sample va the 0.04 ha	riables 24-26 in four (4) $m^2$ subplots placed in representative locations of each quadrant of a plot
	24. V <sub>GVC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 28 % Average of 0.04 ha plots sampled: 1 40 % 2 23 % 3 30 % 4 20 %
	25. V <sub>OHOR</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
		Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
	27. VCOMP	Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 50 % Average of 0.04 ha plots sampled: 1 50 % 2 % 3 % 4 %
0.04 hm/6.0	11/2019 3	
King In	1/4/2 1-3540	
Fot		

# Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Species	dbh <del>(em)</del>	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh <sup>2</sup> (cm <sup>2</sup> )	$\times 0.00079$ (m <sup>2</sup> /0.04 ha)
SL. WILLOW	4.9			BL.WKON	5.7		
bl. willer	5.6			AMIELM	5,8	V	
BUWILLOW	4.0			R. MAPLE	10.0		
SL. WILLAN	5.3			BL. WILLO	5.]		
L. ASH	5,4			BL, WILLOW	4.9		
SOX BURL	8.9			B/ WILL	4.4		
WERM.	8.8			BL.WILL	3.9	1907	
ILVERM.	9.1			BL. WILLOW	4.0		
LVERM	5,7			BLWILLO	4.3		
l. K5H	4.1			BL, WILLIAM	4,4		
1.454	8.8			BL. WILLAN	<b>4.5</b>		
BL, WILL	4,4			BL.WILLO	4.2		

Size Class 2 tons / acre =  $0.892 \times total \ number \ of \ stems = \dots$  tons/acre Record diameter of stems in Size Class 3 (> 7.6 cm />3 in) along 50 ft section of Transect 1 and 2

<u>Transect 1</u> diameter	diameter <sup>2</sup>	Transect 2 diameter	diameter <sup>2</sup>
Stem $1 = 4.0$	16_	Stem $1 = 4.9$	24.01
Stem 2 =		Stem $2 = 3.4$	11.56
Stem 3 =		Stem $3 = 7.9$	62.41
Stem 4 =	<u> </u>	Stem 4 =	
Total diameter <sup>2</sup>	<u>Ila</u>	Total diameter 2	90
	Tc	otal diameter² of stems fr	rom both transects = <u>114</u>

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica 🔀 🖂	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra 🧳 💮	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 🐇 *	Toxicodendron radicans

20/0 = 20/0 =

BL.WILLANDE 38% SR ASH

SILVER MAPLE 22% BL WILL

O.099

GR. ASH 0.063 44% AM ELM

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RED MAPLE 0.051

BOX ELDER 0.04

AM ELM 0.017

JGR ASH 26 49% CAREX ST. 25%

JBL WILLOW 6 11% CREEPING JEWNY 10%

AM ELM 3 5% RUMEX SP. 1%

Appendix B Summaries and Forms for Field Use

Basal Area - PLOT 2

dbh (in)	dbh (cm)	cm²	x .000079
4.9	12.446	154.903	0.012
5.6	14.224	202.322	0.016
4.0	10.160	103.226	0.008
5.3	13.462	181.225	0.014
5.4	13.716	188.129	0.015
8.9	22.606	511.031	0.040
8.8	22.352	499.612	0.039
9.1	23.114	534.257	0.042
5.7	14.478	209.612	0.017
4.1	10.414	108.451	0.009
8.8	22.352	499.612	0.039
4.4	11.176	124.903	0.010
5.7	14.478	209.612	0.017
5.8	14.732	217.032	0.017
10.0	25.400	645.160	0.051
5.1	12.954	167.806	0.013
4.9	12.446	154.903	0.012
4.4	11.176	124.903	0.010
3.9	9.906	98.129	0.008
4.0	10.160	103.226	0.008
4.3	10.922	119.290	0.009
4.4	11.176	124.903	0.010
4.5	11.430	130.645	0.010
4.2	10.668	113.806	0.009
		Total	0.437



# Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

	Name/Location: 7 HILLS PLOT3 Date: 4-6-201
Sample v	ariables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.
1. $V_{TRACT}$	Area of wetland that is contiguous with the WAA and of the same subclass 890 h
$2. \ V_{CORE}$	Percent of wetland tract that is >300 m from unsuitable habitat
3. V <sub>CONNEC</sub>	Percent of wetland tract perimeter that is "connected" to suitable habitat 72 %
4. $V_{SLOPE}$	Percent floodplain slope 0.03 %
5. V <sub>STORE</sub>	Floodplain width to channel width ratio 3.198/50
6. $V_{MACRO}$	Percent of WAA covered with macrotopographic features 6 %
Sample va	riables 7-17 based on a walking reconnaissance of the WAA
7. $V_{FREQ}$	Overbank flood recurrence interval
8. V <sub>ROUGH</sub>	Roughness Coefficient $\frac{\partial^2}{\partial t}(n_{\text{BASE}}) + \frac{\partial^2}{\partial t}(n_{\text{TOPO}}) + \frac{\partial^2}{\partial t}(n_{\text{OBS}}) + \frac{\partial^2}{\partial t}(n_{\text{VEG}}) = \dots$ $\frac{\partial^2}{\partial t}$
9. V <sub>SOILINT</sub>	Percent of WAA with altered soils
10. V <sub>WTF</sub>	Water table fluctuation is (check one): present absent Check data source: groundwater well, redoximorphic features, County Soil Survey
11. $V_{WTD}$	Water table depth is
12. V <sub>WTSLOF</sub>	Percent of WAA with an altered water table slope
13. $V_{SOILPER}$	RM Soil permeability <u>0.4</u> (in./hr)
14. $V_{PORE}$	Percent effective soil porosity 43 %
15. $V_{SURFCO}$	Percent of adjacent stream reach with altered surface connections 67 %
16. $V_{CLAY}$	Percent of WAA with altered clay content in soil profile SILTY CLAY
17. $V_{REDOX}$	Redoximorphic features are (check one): present absent

PUSS

Appendix B Summaries and Forms for Field Use

		oriables 18-20 from a representative number of locations in the WAA using a 0.04 ha lot (11.3 m (37 ft) radius)
y he (	18. V <sub>TBA</sub>	Tree basal area (average of 0.04 ha plot values on next line)
Plat tell &	19. V <sub>TDEN</sub>	Number of tree stems (average of 0.04 ha plot values on next line)
	20. V <sub>SNAG</sub>	Number of snags (average of 0.04 ha plot values on next line)
	Sample va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
15m S	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line) $10.3$ m³/ha Transect: 1 m³/ha 2 m³/ha 3 m³/ha 4 m³/ha
Sunderly &	22. V <sub>LOG</sub>	Volume of logs (average of transect values on next line)
		riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
100	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)
olat a		0.04 ha plots: 1 <u>250</u> stems/ha 2stem/ha 3stems/ha 4stems/ha
	Sample va the 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of a plot
	24. V <sub>GVC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 28 % Average of 0.04 ha plots sampled: 1 85 % 2 Z % 3 7 % 4 60 %
	25. $V_{OHOR}$	Average cover of "O" Horizon (average of 0.04 ha plot values on next line) $95$ % Average of 0.04 ha plots sampled: $185$ % $295$ % $360$ % $460$ %
	26. $V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
	27. V <sub>COMP</sub> ∧	Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 33 %  Average of 0.04 ha plots sampled: 1 33 % 2 % 3 % 4 %
1-0.04 -	6/01	
1-0,04 For Source ked & Frees & Shr Frees & Shr Frees & Shr	mension	L. Noor
W/W P		
Fac	°) В34	

### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

			pelow, square db ins (m²/0.04 ha).			ply by 25 (	
Species	dbh	dbh²	× 0.00079	Species	dbh	dbh²	× 0.00079
	(cm)	(cm <sup>2</sup> )	$(m^2/0.04 ha)$		(cm)	(cm <sup>2</sup> )	(m <sup>2</sup> /0.04 ha
GR ASH	$\parallel \parallel \leq \parallel$			PIN OAK	10.1		
60A24	9.4/			SWEM	10.4		
Chryf SP.	4,1 >			SIWER M	ич		
SWEEKUM	17.5 V			AM, EUM	7,3		
SOX ELDER	8,5	***************************************		SWIGUM	5.2		
GL. ASH	9.47	***************************************		941.00m	21.3 /		
IN ELIA	5.0	- V		SW. GUM	4.4 7		
W. GUM	7,4	7		R. BIKCH	13.3		
SW. GUM	اج	7		SWIGUM	9.9		
PONWOOD	U.5 A			Q. MICHAUXI			Notes and the second
	20,41			A M. EUN	4.5 7		
2 (M. 17 (1 KK)			A				
51 LUER IN B. V <sub>TBA</sub> SI	13.2 um of values		ed columns above =	10 Table 10			
SILVER IN SERVICE SER	um of values	of tree sten		ve = <u>1.1675</u> _ <u>28</u> (ste	(m²/0.04 ha) ems/0.04 ha) ×	25 =	00_stems/ha
SILVEE IN  8. $V_{TBA}$ Su  9. $V_{TDEN}$ To  9. $V_{SNAG}$ To	um of values otal number o	of tree sten	ns from above =	ve = <u>1.1675</u> _ <u>28</u> (ste	(m²/0.04 ha) ems/0.04 ha) ×	25 =	00_stems/ha
3. $V_{TBA}$ Surpress of $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ $V_{WD}/V_{WD}$	um of values otal number of	of tree sten	ns from above = ms from above=	ve = 1,625 28 (stern	(m²/0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2	25 = 7 $5 = 100$	<u>0∂</u> stems/ha
3. $V_{TBA}$ Surpress of the second number of the	um of values otal number of tal number of	of tree sten	ns from above = ms from above= s 1 (0.6-2.5 cm /	$e = \frac{1.625}{28}$ (stem 0.25-1 in) also	(m <sup>2</sup> /0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect	25 = 7 $5 = 100$ ion of Tran	<u>0∂</u> stems/ha
3. $V_{TBA}$ Surface of $V_{SNAG}$ To cord number	um of values otal number of tal number of tal number of stems in ransect 1	of tree sten of snag ste Size Class Tra	ms from above = ms from above= s 1 (0.6-2.5 cm /	$e = \frac{1.025}{28}$ (stem 0.25-1 in) all Total numb	(m²/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems =	25 = 7 $5 = 100$ ion of Tran	stems/ha sect 1 and 2
3. $V_{TBA}$ Surface of number $V_{TDEN}$ To $V_{SNAG}$ T	um of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class	ns from above = ms from above = s 1 (0.6-2.5 cm / msect 2	$re = \frac{1.075}{28}$ (stem 0.25-1 in) ala Total number of stems = 1-3 in) alon	(m²/0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems =	$25 = 7$ $5 = 100$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{100}$	stems/ha sect 1 and 2
3. $V_{TBA}$ Su  3. $V_{TDEN}$ To  4. $V_{SNAG}$ To  4. $V_{SNAG}$ To  5. $V_{SNAG}$ To  5. $V_{SNAG}$ To  6. $V_{SNAG}$ To  6. $V_{SNAG}$ To  7. $V_{SNAG}$ To  8. $V_{SNAG}$ To  8. $V_{SNAG}$ To  9. $V_{SNAG}$ To  10. $V_{SNAG}$ To  11. $V_{SNAG}$ To  12. $V_{WD}$ / $V_{SNAG}$ 13. $V_{SNAG}$ To  14. $V_{SNAG}$ To  15. $V_{SNAG}$ To  16. $V_{SNAG}$ To  17. $V_{SNAG}$ To  18. $V_{SNAG}$ To  19. $V_{SNAG}$ To	um of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai	ms from above = ms from above = s 1 (0.6-2.5 cm / msect 2 s 7 × total number s 2 (2.5 - 7.6 cm msect 2	$ve = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = 1-3 in) along Total number of the number of th	(m²/0.04 ha) × ems/0.04 ha) × 2 s/0.04 ha) × 2 ong a 6 ft sect er of stems = 12 ft section or of stems = 12 ft section	25 = 7 $5 = 100$ $100  of Transe$ $100  of Transe$	stems/ha sect 1 and 2  3.2 tons/acrect 1 and 2
3. $V_{TBA}$ Su  2. $V_{TDEN}$ To  3. $V_{SNAG}$ To  4.722. $V_{WD}/V$ ecord numbe  Tr  Size Co  Size C	um of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8	ms from above = ms from above = s1 (0.6-2.5 cm / msect 2 s2 (2.5 - 7.6 cm msect 2 sect 2 system = 100 msect 100 msec	$re = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = 1-3 in) along Total number of stems =	(m²/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems = g 12 ft section er of stems = g	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Substituting Size Control diametrics.	um of values otal number of tal number of ta	of tree sten of snag ste Size Class acre = 0.18 Size Class Trai acre = 0.8 n Size Class	ns from above =  ms from above =  1 (0.6-2.5 cm / msect 2  37 × total number 2 (2.5 - 7.6 cm msect 2  92 × total numb s 3 (> 7.6 cm /	$re = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = 1-3 in) along Total number of stems = 3 in) along	(m²/0.04 ha) × ems/0.04 ha) × 2 s/0.04 ha) × 2 ong a 6 ft sect er of stems = 1 ft section of stems = 1	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Su 3. $V_{TBA}$ Su 4. $V_{SNAG}$ To 4. $V_{SNAG}$ To 5. $V_{SNAG}$ To 6. $V_{S$	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2 ** s 2 (2.5 - 7.6 cm msect 2 ** s 3 (> 7.6 cm / Transect / Tr	$ve = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ diameter of stems = $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ diameter	(m²/0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems = g 12 ft section er of stems = 50 ft section of diameter²	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Surface Coord diameter $\frac{T_{TANSect 1}}{Stem 1}$	um of values otal number of tal number of ta	of tree sten of snag ste Size Class acre = 0.18 Size Class Trai acre = 0.8 n Size Class	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2 **  37 × total number  5 2 (2.5 - 7.6 cm / msect 2 **  92 × total number  5 3 (> 7.6 cm / msect 2 **  Transect  Stem 1	$e = \frac{1.075}{28}$ (stem 0.25-1 in) along to a rotal number of stems = 1.7 (stems) along to a rotal number of stems = 1.3 in) along to a diameter = 1.5	(m²/0.04 ha) × ems/0.04 ha) × 2 s/0.04 ha) × 2 ong a 6 ft sect er of stems = 1 ft section of stems = 1	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Su 3. $V_{TBA}$ Su 4. $V_{SNAG}$ To 4. $V_{SNAG}$ To 5. $V_{SNAG}$ To 6. $V_{SNAG}$ To 7. Size Co 6. Size	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s1 (0.6-2.5 cm / msect 2 **  37 × total number s2 (2.5 - 7.6 cm / msect 2 **  92 × total numb s3 (> 7.6 cm / Transect Stem 1 Sten	$ve = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ diameter of stems = $\frac{7}{1-3}$ in) along $\frac{7}{1-3}$ diameter	(m²/0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems = g 12 ft section er of stems = 50 ft section of diameter²	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Surface of number $Tr$ Size Concord diameter $Transect\ 1$ Stem 1 = $Transect\ 2$	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ms from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2  s 2 (2.5 - 7.6 cm msect 2  92 × total numb s 3 (> 7.6 cm / Stem 1  Stem Stem Stem 4	$re = \frac{1.075}{28}$ (stem 0.25-1 in) along to a farmer of stems = $\frac{7}{1-3}$ in) along to a farmer of stems = $\frac{3.5}{1.2}$ in $\frac{3.5}{1.2}$	(m²/0.04 ha) ems/0.04 ha) × s/0.04 ha) × 2 ong a 6 ft sect er of stems = g 12 ft section er of stems = 50 ft section of diameter²	25 = 7 $5 = 100$ ion of Transe of Transe	stems/ha sect 1 and 2  5.2 tons/acre ct 1 and 2
3. $V_{TBA}$ Surface of number $Tr$ Size $C$ coord number $Tr$ Size $C$ coord diameter $Tr$ Stem $1 = 1$ Stem $1 = 1$ Stem $1 = 1$ Stem $1 = 1$	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	as from above =  ms fro	$ve = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = $\frac{7}{1-3}$ in) along $\frac{2}{3}$ diameter = $\frac{3.5}{1.2}$ = $\frac{3.5}{1.3}$	(m²/0.04 ha) × 2 s/0.04 ha) × 2 ong a 6 ft sect er of stems =	25 = 7 $5 = 100$ ion of Transe a of Transect	stems/ha sect 1 and 2  2 tons/acre ct 1 and 2  3 2 tons/acre ct 1 and 2  3 9 tons/acre 1 and 2
3. $V_{TBA}$ Substituting Size Of the Siz	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2 **  37 × total number s 2 (2.5 - 7.6 cm / msect 2 **  92 × total number s 3 (> 7.6 cm / Transect Stem 1 Stem Stem Stem Total dia Total diamet	$re = \frac{1\sqrt{025}}{28}$ (stem $re = \frac{1\sqrt{025}$	(m²/0.04 ha) × ems/0.04 ha) × 2  s/0.04 ha) × 2  ong a 6 ft sect er of stems =	25 = 7 $5 = 100$ ion of Transe a of Transect	stems/ha sect 1 and 2  2 tons/acrect 1 and 2  3 2 tons/acrect 1 and 2  3 9 tons/acred 1 and 2
9. $V_{TDEN}$ To  1/22. $V_{WD}/V$ ecord numbe  Tr  Size Co  ecord diamete  Transect 1  Stem 1 =  Stem 2 =  Stem 3 =  Stem 4 =	im of values otal number of tal number of ta	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2 **  37 × total number s 2 (2.5 - 7.6 cm / msect 2 **  92 × total number s 3 (> 7.6 cm / Transect Stem 1 Stem Stem Stem Total dia Total diamet	$ve = \frac{1.075}{28}$ (stem 0.25-1 in) along Total number of stems = $\frac{7}{1-3}$ in) along $\frac{2}{3}$ diameter = $\frac{3.5}{1.2}$ = $\frac{3.5}{1.3}$	(m²/0.04 ha) × ems/0.04 ha) × 2  s/0.04 ha) × 2  ong a 6 ft sect er of stems =	25 = 7 $5 = 100$ ion of Transe a of Transect	stems/h sect 1 and 2  2 tons/ac ct 1 and 2  3 2 tons/ac tons/ac 1 and 2

PLOT 3

Total tons Cubic feet	Plass 3 tons / acre = $0.0687 \times Total\ diameter^2$ of stems from both transects = . $\frac{1.6}{2.7}$ tons/acre / acre (sum of Size Classes 1-3 from above) =
23. $V_{SSD}$ oy sample	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:  Subplot 1  Average 10 × 250 stems/ha
24. V <sub>GVC</sub>	Estimate percent cover of ground vegetation in four m² subplots then average:  1 95 % 2 2 % 3 7 % 4 60 %
25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m <sup>2</sup> subplots then average: 1 <u>85</u> % 2 <u>95</u> % 3 <u>100</u> % 4 <u>100</u> % Average <u>95</u> %
26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1 00 % 2 00 % 3 00 % 4 00 %
27. V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below Tree = $100\%$ Shrub/Sapling = $100\%$ Ground Vegetation = $100\%$ Average $100\%$ Average
	Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua 🗸 👚	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua *	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana *	Toxicodendron radicans

1,625 SWEETUUM 0,959 59% | LEX 10% SWEET 6UM 10% ULMUS AM 10%

**B36** 

Appendix B Summaries and Forms for Field Use 35

Basal Area - PLOT 3

dbh (in)	dbh (cm)	cm²	x .000079
11.0	27.940	780.644	0.062
9.4	23.876	570.063	0.045
4.1	10.414	108.451	0.009
17.5	44.450	1975.803	0.156
8.5	21.590	466.128	0.037
8.4	21.336	455.225	0.036
5.0	12.700	161.290	0.013
7.9	20.066	402.644	0.032
15.0	38.100	1451.610	0.115
4.5	11.430	130.645	0.010
20.4	51.816	2684.898	0.212
13.2	33.528	1124.127	0.089
10.1	25.654	658.128	0.052
10.4	26.416	697.805	0.055
4.4	11.176	124.903	0.010
7.3	18.542	343.806	0.027
5.2	13.208	174.451	0.014
21.3	54.102	2927.026	0.231
4.4	11.176	124.903	0.010
13.3	33.782	1141.224	0.090
9.9	25.146	632.321	0.050
4.1	10.414	108.451	0.009
4.5	11.430	130.645	0.010
14.5	36.830	1356.449	0.107
11.0	27.940	780.644	0.062
9.7	24.638	607.031	0.048
7.0	17.780	316.128	0.025
4.6	11.684	136.516	0.011
		Total	1.625

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Assessment Team:
Project Name/Location: 7 HILLS PLOTY Date: 4-6-201
Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.
1. $V_{TRACT}$ Area of wetland that is contiguous with the WAA and of the same subclass $970$ h
2. $V_{CORE}$ Percent of wetland tract that is >300 m from unsuitable habitat
3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat $\boxed{12}$ %
4. $V_{SLOPE}$ Percent floodplain slope $0.03$ %
5. $V_{STORE}$ Floodplain width to channel width ratio 5.6.35 5.0
6. $V_{MACRO}$ Percent of WAA covered with macrotopographic features
Sample variables 7-17 based on a walking reconnaissance of the WAA
7. $V_{FREQ}$ Overbank flood recurrence interval
8. $V_{ROUGH}$ Roughness Coefficient $\frac{\sqrt{0.3}}{2}$ $(n_{BASE}) + \frac{\sqrt{0.05}}{2} (n_{TOPO}) + \frac{\sqrt{0.1}}{2} (n_{OBS}) + \frac{\sqrt{0.05}}{2} (n_{VEG}) = \dots $
9. V <sub>SOILINT</sub> Percent of WAA with altered soils
10. $V_{WTF}$ Water table fluctuation is (check one): present absent Check data source: groundwater well, redoximorphic features, County Soil Survey
11. $V_{WTD}$ Water table depth is
12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope
13. V <sub>SOILPERM</sub> Soil permeability
14. V <sub>PORE</sub> Percent effective soil porosity
15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections $67$ %
16. $V_{CLAY}$ Percent of WAA with altered clay content in soil profile
17. $V_{REDOX}$ Redoximorphic features are (check one): present absent

Appendix B Summaries and Forms for Field Use

		riables 18-20 from a representative number of locations in the WAA using a 0.04 ha ot (11.3 m (37 ft) radius)
od hr	18. V <sub>TB4</sub>	Tree basal area (average of 0.04 ha plot values on next line)
gorden ?	19. V <sub>TDEN</sub>	Number of tree stems (average of 0.04 ha plot values on next line)
	20. V <sub>SNAG</sub>	Number of snags (average of 0.04 ha plot values on next line)
	Sample va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
2-15~ 5	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line)
2-15m transcuts {	22. V <sub>LOG</sub>	Volume of logs (average of transect values on next line)
		riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
2-0004	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)
- Marie	Sample var the 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of plot
	24. V <sub>GrC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 30 % Average of 0.04 ha plots sampled: 1 25 % 2 25 % 3 30 % 4 40 %
	25. V <sub>онок</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26. $V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
1-0.04 has sampled for 3'shrub/sup)  A lm2 pl  For ore	27. V <sub>COMP</sub>	Concurrence with all strata dominants (average of 0.04 ha plot values on next line)  Average of 0.04 ha plots sampled: 1 83 % 2 % 3 % 4 %
1-0.09 mm	c +1667	
12121/508	<b>.</b>	
* /w, 1/	ats soupled A vegetor	
F. r 5"."	B34	Annendix B. Summaries and Forms for Field Use

	the control of the control of the control		-team			4	ite : <u>4-6-2</u> 0
roject Nam	ie/Location :	- <u>                           </u>	1662		101 Number		
			elow, square db ns (m²/0.04 ha).				00079 ( $m^2$ ), and ( $m^2$ /ha).
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)
SILVELMAP	6612			PIBLICH	7, 9		
ilverm.	12			SILVERM.	4.7		
'i Birch	8.9			SYCHMAR	6.8		
. BIRCUL	17			SILVERM	5.0	N	
LUCK M.	6.4			P. HLLH	10.9		
BIRCH	8.9	***************************************		Z. BINCH	7,5		
BIRCH	8.5			12.16/16/1	9.5		
BLCH	10.3			PIN OKK	6.2		
11.1166 m	7,1			12.BIRCH	9.0		
OX ELD	И.]			12.13/12/4	10.5		
OX ELDI	4.2			Q.Black	$\tilde{q}, \tilde{q}$		
The State of Programme and the	NAME OF TAXABLE PARTY O				3,9	NAME OF THE PERSON NAME OF THE P	
. $V_{TBA}$ S	otal number	of tree stem	d columns abov	<u>45</u> (ste	(m <sup>2</sup> /0.04 ha) ems/0.04 ha)	× 25 = 112	5_stems/ha
. $V_{TDEN}$ T	um of values	of tree stem		re = 2 · 13 4 _ <u>45</u> (ste	(m <sup>2</sup> /0.04 ha) ems/0.04 ha)	× 25 = 112	5_stems/ha
. $V_{TBA}$ So $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SO}$ (and $V_{SO}$ ) Size $V_{SO}$	otal number otal number otal number  Log er of stems in ransect 1 ** er of stems in ransect 1	of tree stem of snag sten size Class Tran acre = 0.18 Size Class Tran acre = 0.89	s from above =	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along the following of stems = $\frac{1}{1-3}$ in) along the following error of stems = $\frac{1}{1-3}$ in $$	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sec er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $x = \frac{6}{1}$ $x = \frac{1}{2}$	stems/ha ste
$V_{TBA}$ Solve $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SIZE}$ $V_{$	otal number otal number otal number  Log er of stems in ransect 1 ** er of stems in ransect 1	of tree stem of snag sten size Class Tran acre = 0.18 Size Class Tran acre = 0.89	s from above =  1 (0.6-2.5 cm / nsect 2 * * *  7 × total numbe 2 (2.5 - 7.6 cm sect 2 * *  12 × total numbe 3 3 (> 7.6 cm / Transect	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along $Total \ number \ of \ stems = \frac{7}{1-3}$ in) along $Total \ number \ of \ stems = \frac{3}{3}$ in) along $Total \ number \ of \ stems = \frac{3}{3}$ in) along $Total \ number \ of \ stems = \frac{3}{3}$ in) along $Total \ number \ of \ stems = \frac{3}{3}$	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems = ag 12 ft section er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $\frac{6}{1}$ on of Transe $\frac{2}{1}$ of Transect	stems/ha ste
$V_{TBA}$ Solve $V_{SNAG}$ To	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i	of tree stem of snag sten slize Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class	s from above =  1 (0.6-2.5 cm / nsect 2 * *  7 × total number 2 (2.5 - 7.6 cm sect 2 * *  12 × total number 3 (> 7.6 cm / Transect Stem 1 **	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along of stems = 1-3 in) along of stems = 1-3 in) along along of stems = 1-3 in) a	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $\frac{6}{1}$ on of Transe $\frac{2}{1}$ of Transect	stems/ha ste
$V_{TBA}$ So $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SIZE}$ Coord number $V_{SIZE}$ Coord diametric $V_{SIZE}$ Coord diametric $V_{SIZE}$ $V_{SI$	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i	of tree stem of snag sten slize Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class	s from above =  1 (0.6-2.5 cm / nsect 2 * * *  7 × total number 2 (2.5 - 7.6 cm sect 2 * *  12 × total number 3 (> 7.6 cm / Transect Stem 1 sect 2 * *  Stem	$e = \frac{2 \cdot  3 }{45}$ (stem 0.25-1 in) along to f stems = $\frac{7}{1-3}$ in) along to f stems = $\frac{7}{3}$ in) along $\frac{2}{3}$ diameter $\frac{7}{3}$ diameter $\frac{7}{3}$	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $\frac{6}{1}$ on of Transe $\frac{2}{1}$ of Transect	stems/ha ste
$V_{TBA}$ Solve $V_{SNAG}$ To	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i	of tree stem of snag sten slize Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class	s from above =  1 (0.6-2.5 cm / nsect 2 * * *  7 × total number 2 (2.5 - 7.6 cm sect 2 * *  12 × total number 3 (> 7.6 cm / Transect Stem 1 sect 2 * *  Stem	$re = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along $rotal$ number of stems = $rotal$ number of stems	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $\frac{6}{1}$ on of Transe $\frac{2}{1}$ of Transect	stems/ha ste
$V_{TBA}$ So $V_{TDEN}$ To $V_{SNAG}$ To $V$	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i diameter	of tree stem of snag sten slize Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class	s from above =  1 (0.6-2.5 cm / nsect 2 * * *  7 × total numbe 2 (2.5 - 7.6 cm sect 2 * *  12 × total numbe 3 3 (> 7.6 cm / Transect Stem 1 *  Stem Stem	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along Total number of stems = $\frac{7}{1-3}$ in) along Total number of stems = $\frac{2}{3}$ in) along diameter = $\frac{9}{12}$	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems = g 12 ft section er of stems =	$x = \frac{1}{2}$ $25 = \frac{5}{6}$ $\frac{6}{1}$ on of Transe $\frac{2}{1}$ of Transect	stems/ha ste
$V_{TBA}$ Solve $V_{TDEN}$ To $V_{SNAG}$ To	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i diameter	of tree stem of snag sten slize Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class	s from above =  1 (0.6-2.5 cm / nsect 2 * * *  7 × total number 2 (2.5 - 7.6 cm sect 2 * *  12 × total number 3 (> 7.6 cm / Transect Stem 1 *  Stem Stem Stem 4 **	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along $e = \frac{1}{2}$ (stem of stems = $\frac{1}{2}$ (stem of stems = $\frac{1}{2}$ (stem of stems = $\frac{1}{2}$ of stems = $\frac{1}$	(m²/0.04 ha) ems/0.04 ha) s/0.04 ha) × ong a 6 ft sector of stems =  12 ft section diameter²	$x = \frac{1}{2}$ $25 = \frac{5}{2}$ $x = \frac{5}{2}$ $x = \frac{5}{2}$ $x = \frac{1}{2}$	stems/ha ste
$V_{TBA}$ Solve $V_{SNAG}$ To	otal number otal number otal number otal number er of stems in ransect 1 er of stems in ransect 1 class 2 tons / ter of stems i diameter	of tree stem of snag stem of snag stem of Size Class Tran acre = 0.89 n Size Class diameter <sup>2</sup>	s from above =  1 (0.6-2.5 cm / nsect 2 ** 7 × total numbe 2 (2.5 - 7.6 cm sect 2 ** 12 × total numbe 3 3 (> 7.6 cm / Transect Stem 1 Stem Stem Stem 4 = Total dia Total diamet	$e = \frac{2 \cdot 134}{45}$ (stem 0.25-1 in) along $e = \frac{1}{2}$ (stem of stems = $\frac{1}{2}$ (stem of stems = $\frac{1}{2}$ (stem of stems = $\frac{1}{2}$ of stems = $\frac{1}$	(m²/0.04 ha)  ems/0.04 ha)  s/0.04 ha) ×  ong a 6 ft sector of stems =  2 12 ft section diameter²  from both training the sector of stems =	$ \times 25 = \frac{1 2}{50} $ $ 25 = \frac{50}{50} $ $ 25 = \frac{50}{50} $ $ 25 = \frac{1}{50} $ $ 30 = \frac{1}{50} $ $ 30 = \frac{1}{50} $ $ 40 = \frac{1}{50} $ $ 50 = \frac{1}{50} $ $ 60 = \frac{1}{50} $ $ 60 = \frac{1}{50} $ $ 70 $	stems/ha ste

Cul	al tons / vic feet /	lass 3 tons / acre = $0.0687 \times Total\ diameter^2\ of\ stems\ from\ both\ transects = tons/acre / acre (sum of Size Classes 1-3 from above) = tons/acre / acre = (32.05 \times total\ tons\ /\ acre) / 0.58 = $
23.	V <sub>SSD</sub>	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250: Subplot 1 $\mu m = 100$ Subplot 2 $\mu m = 100$ Su
24.	$V_{GVC}$	Estimate percent cover of ground vegetation in four m² subplots then average: 1 25 % 2 25 % 3 30 % 4 40 %
25.	V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m² subplots then average: $1 \frac{95}{9} \% 2 \frac{100}{9} \% 3 \frac{50}{9} \% 4 \frac{90}{9} \% \dots Average \frac{8}{9} \%$
26,	$V_{AHOR}$	Estimate percent cover of "A" Horizon in four m <sup>2</sup> subplots then average: $1 \underline{100}\% 2 \underline{100}\% 3 \underline{100}\% 4 \underline{100}\% \dots$ Average $\underline{100}\%$
27.	V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below Tree = $100\%$ Shrub/Sapling = $100\%$ Ground Vegetation = $100\%$ Average $100\%$ Average $100\%$

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum /	Acer rubrum	Arundinaria gigantea
Betula nigra 🗸	Betula nigra	Aster sp.  5
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis /	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica 🎏 🗸	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 🏄 🗸	Toxicodendron radicans

2 13,06 50% 13 7090 H3

**B36** 

PINERBRUH 1.2 56 GRASH 6 GOOD CEERING SCHNY 5% V
OTTOWNSO 0.42

RIM ELM Z ZOOD CAREX SP. 490
CAREX SP. 150
25%

Appendix B Summaries and Forms for Field Use

Basal Area - PLOT 4

dbh (in)	dbh (cm)	cm²	x .000079
6.2	15.748	248.000	0.020
12.0	30.480	929.030	0.073
8.9	22.606	511.031	0.040
12.0	30.480	929.030	0.073
6.4	16.256	264.258	0.021
8.9	22.606	511.031	0.040
8.5	21.590	466.128	0.037
10.3 7.9	26.162 20.066	684.450 402.644	0.054
7.9 4.1	10.414	108.451	0.032 0.009
4.2	10.414	113.806	0.009
9.7	24.638	607.031	0.048
7.9	20.066	402.644	0.032
4.7	11.938	142.516	0.011
6.8	17.272	298.322	0.024
5.0	12.700	161.290	0.013
10.9	27.686	766.515	0.061
7.5	19.050	362.903	0.029
9.5	24.130	582.257	0.046
6.2	15.748	248.000	0.020
8.0	20.320	412.902	0.033
10.5	26.670	711.289	0.056
9.9	25.146	632.321	0.050
3.9	9.906	98.129	0.008
4.1	10.414	108.451	0.009
5.8 6.8	14.732	217.032 298.322	0.017
7.2	17.272 18.288	334.451	0.024 0.026
7.5	19.050	362.903	0.020
14.3	36.322	1319.288	0.104
5.3	13.462	181.225	0.014
11.7	29.718	883.160	0.070
11.6	29.464	868.127	0.069
11.0	27.940	780.644	0.062
8.5	21.590	466.128	0.037
9.9	25.146	632.321	0.050
6.7	17.018	289.612	0.023
11.4	28.956	838.450	0.066
9.2	23.368	546.063	0.043
4.4	11.176	124.903	0.010
28.8	73.152	5351.215	0.423
11.5	29.210	853.224	0.067
12.0	30.480	929.030	0.073
10.0	25.400	645.160 392.515	0.051
7.8	19.812	392.515 <b>Total</b>	0.031 <b>2.134</b>
		iotal	2.134

Plot 5

PSS

Assessment Team :	A-Team			
Project Name/Location:	J HILLS	Plot	53	Date: 4-6-2017
Sample variables 1-6 using aerial	l photos, topograp	ohic maps, s	cenic overlo	oks, local informants, etc.
1. $V_{TRACT}$ Area of wetland that is	contiguous with the	he WAA and	d of the same	subclass <u>890</u> h
2. $V_{CORE}$ Percent of wetland trace	ct that is >300 m fi	om unsuital	ole habitat	<u>47</u> %
3. V <sub>CONNECT</sub> Percent of wet	land tract perimete	er that is "co	nnected" to s	uitable habitat <u>72</u> %
4. $V_{SLOPE}$ Percent floodplain slop	e O service exercises exercises	****	*****	0.03 %
5. $V_{STORE}$ Floodplain width to cha	annel width ratio .	. 4742	<i>[5</i> 0	<u>95</u>
6. $V_{MACRO}$ Percent of WAA cover	ed with macrotopo	graphic feat	ures	
Sample variables 7-17 based on a	walking reconnai	ssance of th	e WAA	
7. $V_{FREQ}$ Overbank flood recurre Check data source: gag dimensionless curve	e data 🗹, local kn	owledge <u>√</u> ,	flood frequen	
8. $V_{ROUGH}$ Roughness Coefficient	$\frac{10^{\frac{1}{2}}}{(n_{\text{BASE}})} + \frac{10^{\frac{1}{2}}}{10^{\frac{1}{2}}}$	$(n_{\text{TOPO}}) + \frac{1}{2}$	び (n <sub>OBS</sub> ) + <u>_</u>	$\frac{1}{n_{\text{VEG}}} = \dots = \frac{0.165}{1.05}$
9. $V_{SOILINT}$ Percent of WAA with a	ltered soils	el es és el sel es les les des		<u>0</u> %
10. $V_{WTF}$ Water table fluctuation Check data source: grou	is (check one): undwater well, ı	redoximorph	proic features,	esent absent County Soil Survey
11. $V_{WTD}$ Water table depth is Check data source: group	ındwater well, r	edoximorph	ic features, <u>v</u>	inches 
12. $V_{WTSLOPE}$ Percent of WAA wi	th an altered water	table slope	*****	
13. $V_{SOILPERM}$ Soil permeability	e elemente de la	्रेड्ड के के कि के कि कि के हैं। जिस्सी	*******	
14. $V_{PORE}$ Percent effective soil po	rosity	*****	****	<u>42</u> %
15. V <sub>SURFCON</sub> Percent of adjacent s	stream reach with	altered surfa	ce connection	ns
16. $V_{CLAY}$ Percent of WAA with all	tered clay content	in soil profil	eシリゴ.	LOAM 0 %
17. $V_{REDOX}$ Redoximorphic features	are (check one): .	g la la marana	pre	sent <u></u> absent

PLOT 58

		rariables 18-20 from a representative number of locations in the WAA using a 0.04 ha plot (11.3 m (37 ft) radius)
04 hr	. 18. V <sub>TB-1</sub>	Tree basal area (average of 0.04 ha plot values on next line)
glor by	19. $V_{TDEN}$	Number of tree stems (average of 0.04 ha plot values on next line) 925 stems / ha 0.04 ha plots: 1 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
	20. V <sub>SNAG</sub>	Number of snags (average of 0.04 ha plot values on next line)
	Sample v	ariables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
15M.5	21. $V_{WD}$	Volume of woody debris (average of transect values on next line)
installs }	22. $V_{LOG}$	Volume of logs (average of transect values on next line) $\frac{17.55}{m^3/ha}$ m³/ha Transect: 1 m³/ha 2 m³/ha 3 m³/ha 4 m³/ha
		ariable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in ative locations of the 0.04 ha plot
o.004 hor eplots	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)  0.04 ha plots: 1 3500 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
Children Comment	Sample verble 0.04 h	ariables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of a plot
	24. V <sub>GFC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 75 % Average of 0.04 ha plots sampled: 1 \( \bar{0} \) % 2 \( \bar{5} \) % 3 \( \bar{5} \) % 4 \( \bar{0} \) %
	25. V <sub>OHOR</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26. $V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line) $\frac{100}{600}$ % Average of 0.04 ha plots sampled: $1 \underline{100}$ % $2 \underline{100}$ % $3 \underline{100}$ % $4 \underline{100}$ %
	27. V <sub>сомі</sub>	Concurrence with all strata dominants (average of 0.04 ha plot values on next line)%  Average of 0.04 ha plots sampled: 1 % 2 % 3 % 4 %
1-0.04 he sawaled for	Luces 1	
1-0.04 hr sampled for surb/sapl X /m² 1	Joth Sove	Howard Control of the
#	"y 162	

B34

#### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

roject Nam	e/Location :		HIUS		Plot Number	r: <u>58</u> da	ite: <u>4-6-2</u> 0
			pelow, square db ns (m²/0.04 ha).				
Species	dbh (cm)	dbh <sup>2</sup> (cm <sup>2</sup> )	× 0.00079 (m <sup>2</sup> /0.04 ha)	Species	dbh (cm)	dbh² (cm²)	$\times 0.00079$ (m <sup>2</sup> /0.04 ha)
BLIWILL	6.0			W M	5.3		
BL, WILLIAM	4,9			M = M	4.6		
LWILL	4.4			11 1/	5.0		
11	4,			N N	4.9		
11	4,5				4.8		
11111	5.3			11 11	5.7		
11	4.2				3.9		
\i 1\	7,4			11.11	4.5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
11 (1)	8.6			11.11	5.0		
WWW	5,4		3000		5.7		
11. 11	6.0			11 11	6.2		
11 11	5.9	from shad	ed columns abov		4.3	) × 25 = \ \frac{1}{2}	
3. $V_{TBA}$ Sure $V_{TDEN}$ To $V_{SNAG}$ To $V_{22}$ . $V_{WD}/V$	5, 9  um of values  otal number otal number of	of tree sten	ns from above = ms from above=	e = 15   1 $37  (starting of the starting of the starting$	4.3 (m²/0.04 ha ems/0.04 ha) s/0.04 ha) ×	$ \times 25 = 97 $ $ 25 = 0 $	stems/ha
3. $V_{TBA}$ Su  3. $V_{TBA}$ Su  3. $V_{TBA}$ To  3. $V_{SNAG}$ To  4.722. $V_{WD}/V_{C}$ 4.722. $V_{WD}/V_{C}$ 6. Size Coecord number Tr  6. Size Coecord number Tr	um of values  otal number of  toa  r of stems in  ransect 1 * * * * Class 1 tons /  r of stems in  ransect 1 * * * * * * * * * * * * * * * * * *	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai	ms from above = ms from above = s 1 (0.6-2.5 cm / msect 2 s 7 × total numbe s 2 (2.5 - 7.6 cm / msect 2	e = <u>15    </u> <u>37</u> (stem  0.25-1 in) al  Total number of stems =   1-3 in) alor  Total number	(m²/0.04 ha)  ems/0.04 ha)  s/0.04 ha) ×  ong a 6 ft sector of stems =  ing 12 ft section of stems =	$ \times 25 = 97 $ $ 25 = 0 $ $ 25 = $	stems/ha stems/ha asect 1 and 2 2 tons/acre ct 1 and 2
3. $V_{TBA}$ Substitute of $V_{SNAG}$ To solve ord number of $V_{SSNAG}$ To solve ord	um of values  otal number of  tal nu	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Tra acre = 0.8	ms from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2  s 7 × total numbe s 2 (2.5 - 7.6 cm msect 2  92 × total numbe	e = 15   1   37 (stem   0.25-1 in) al   Total number of stems = 1-3 in) alor   Total number of stems = 1-3 in) alor   Total number of stems = 1-3 in) alor   Total number of stems = 1-3 in)   Total number of ste	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems =	$ \times 25 = 97 $ $ 25 = 0 $ $ 25 = $	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre
3. $V_{TBA}$ Solution Size Cocord diamet	um of values  otal number of  tal nu	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class	ms from above = ms from above = s1 (0.6-2.5 cm / msect 2 s7 × total numbe s2 (2.5 - 7.6 cm / msect 2 s92 × total numbe s3 (> 7.6 cm /	e = .5      G (stem  0.25-1 in) al  Total number of stems =    1-3 in) alor  Total number of stems =    >3 in) along	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems = 	$ \times 25 = 97 $ $ 25 = 0 $ etion of Transe on of Transe of Transect	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre
i. $V_{TBA}$ Sur. $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ To excord number $V_{TDEN}$ Size $V_{TDEN}$ Size $V_{TDEN}$ Cord number $V_{TDEN}$ Size $V_{TDEN}$ Cord number $V_{TDEN}$ Size $V_{T$	um of values  otal number of  tal nu	of tree sten of snag ste Size Class acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	as from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2	e = <u>15    </u> G(stem  0.25-1 in) al  Total number of stems =    1-3 in) along  2 diameter	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems =	$ \times 25 = 97 $ $ 25 = 0 $ etion of Transe on of Transe of Transect	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre
i. $V_{TBA}$ Sur. $V_{TDEN}$ To $V_{SNAG}$ To $V_{SNAG}$ To $V_{SNAG}$ To soord number $V_{SC}$ is a size $V_{SC}$ coord number $V_{SC}$ is $V_{SC}$ in $V_{SC}$ is $V_{SNAG}$ and $V_{SNAG}$ is $V_{SNAG}$ is $V_{SNAG}$ is $V_{SNAG}$ is $V_{SNAG}$ is $V_{SNAG}$ in $V_{SNAG}$ is $V_{SNAG}$ in $V_{SNAG}$ is $V_{SNAG}$ in $V_{SNAG}$ in $V_{SNAG}$ is $V_{SNAG}$ in $V_{SNAG}$ in $V_{SNAG}$ in $V_{SNAG}$ in $V_{SNAG}$ is $V_{SNAG}$ in	um of values  otal number of  tal nu	of tree sten of snag ste Size Class Tra acre = 0.18 Size Class Trai acre = 0.8 n Size Class	as from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2  37 × total numbe s 2 (2.5 - 7.6 cm / msect 2  92 × total numbe s 3 (> 7.6 cm / Transect Stem 1 =	e = <u>15    </u> G(stem  0.25-1 in) al  Total number of stems =    1-3 in) along  2 diameter	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems = 	$ \times 25 = 97 $ $ 25 = 0 $ etion of Transe on of Transe of Transect	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre
3. $V_{TBA}$ So $V_{TBA}$ So $V_{TBA}$ So $V_{TBA}$ To $V_{SNAG}$ To $V_{SNAG}$ To ecord number $V_{TA}$ Size $V_{TA}$ So $V_{TBA}$ Size $V_{TA}$ Size $V_{$	um of values  otal number of  tal nu	of tree sten of snag ste Size Class acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2	e = $.5$   $.5$	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems = 	$ \times 25 = 97 $ $ 25 = 0 $ etion of Transe on of Transe of Transect	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre
$V_{TBA}$ Surface $V_{TDEN}$ To $V_{SNAG}$	um of values  otal number of  toa  r of stems in  ransect 1 **  class 1 tons /  r of stems in  ransect 1 **  class 2 tons /  er of stems i  diameter  7,3	of tree sten of snag ste Size Class acre = 0.18 Size Class Trai acre = 0.8 n Size Class diameter	ns from above =  ms from above =  s 1 (0.6-2.5 cm / msect 2	e = $.5$   1 $.0$ (stem 0.25-1 in) al $.0$ (stem of stems = $.0$ / 1-3 in) alor $.0$ Total number of stems = $.0$ 3 in) along $.0$ diameter $.0$ 2 diameter $.0$ 2 = $.0$ 3 = $.0$ = $.0$	4.3 (m²/0.04 ha) ems/0.04 ha) × ong a 6 ft sector of stems = 	$ \times 25 = 97 $ $ 25 = 0 $ etion of Transe on of Transe of Transect	stems/ha stems/ha sect 1 and 2  or tons/acre ct 1 and 2  or tons/acre

PLOTE B

Total tons Cubic feet	lass 3 tons / acre = $0.0687 \times Total\ diameter^2\ of\ stems\ from\ both\ transects = .                                  $
23. V <sub>SSD</sub>	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:  Subplot 1  Average  Average  Average  Subplot 2  Subplot 2  Average  A
24. V <sub>GVC</sub>	Estimate percent cover of ground vegetation in four m <sup>2</sup> subplots then average:  1 10 % 2 5 % 3 5 % 4 0 %
25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m² subplots then average:  1 100 % 2 100 % 3 100 % 4 100 %
26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1 100 % 2 100 % 3 100 % 4 100 %
27. V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below  Tree = 100 % Shrub/Sapling = 100 % Ground Vegetation = 0 % Average 67 %

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa 🌞	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica 🌠 🖫 🎷	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra 🏑	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis /	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana	Toxicodendron radicans

BL WILLW 15 53

LIZARD'S TAIL 10%

Basal Area - PLOT 5B

dbh (in)	dbh (cm)	cm²	x .000079
6.0	15.240	232.258	0.018
4.9	12.446	154.903	0.012
4.4	11.176	124.903	0.010
4.1	10.414	108.451	0.009
4.5	11.430	130.645	0.010
5.3	13.462	181.225	0.014
4.2	10.668	113.806	0.009
7.4	18.796	353.290	0.028
8.6	21.844	477.160	0.038
5.4	13.716	188.129	0.015
6.0	15.240	232.258	0.018
5.9	14.986	224.580	0.018
5.3	13.462	181.225	0.014
4.6	11.684	136.516	0.011
5.0	12.700	161.290	0.013
4.9	12.446	154.903	0.012
4.8	12.192	148.645	0.012
5.7	14.478	209.612	0.017
3.9	9.906	98.129	0.008
4.5	11.430	130.645	0.010
5.0	12.700	161.290	0.013
5.7	14.478	209.612	0.017
6.2	15.748	248.000	0.020
4.3	10.922	119.290	0.009
5.5	13.970	195.161	0.015
4.0	10.160	103.226	0.008
4.0	10.160	103.226	0.008
5.4	13.716	188.129	0.015
4.3	10.922	119.290	0.009
4.9	12.446	154.903	0.012
4.8	12.192	148.645	0.012
5.1	12.954	167.806	0.013
4.3	10.922	119.290	0.009
5.4	13.716	188.129	0.015
4.6	11.684	136.516	0.011
4.5	11.430	130.645	0.010
6.0	15.240	232.258	0.018
	To	otal	0.511

Assessment 7	ream: A-TEAM
Project Name	e/Location: 7 HILLS SITE 6 Date: 4-6-2017
Sample varia	bles 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.
1. $V_{TRACT}$ A	rea of wetland that is contiguous with the WAA and of the same subclass 890 ha
2. V <sub>CORE</sub> Po	ercent of wetland tract that is >300 m from unsuitable habitat
3. $V_{CONNECT}$	Percent of wetland tract perimeter that is "connected" to suitable habitat%
4. V <sub>SLOPE</sub> Pe	ercent floodplain slope
5. V <sub>STORE</sub> FI	oodplain width to channel width ratio 3 3.7.5 / 5.0
6. V <sub>MACRO</sub> Pe	ercent of WAA covered with macrotopographic features
Sample varial	oles 7-17 based on a walking reconnaissance of the WAA
Cl	verbank flood recurrence interval
8. $V_{ROUGH}$ Ro	bughness Coefficient $(n_{\text{BASE}}) + (n_{\text{TOPO}}) + (n_{\text{TOPO}}) + (n_{\text{OBS}}) + (n_{\text{VEG}}) = \dots$
9. V <sub>SOILINT</sub> Pe	rcent of WAA with altered soils
10. V <sub>WTF</sub> W Ch	ater table fluctuation is (check one): present absent eck data source: groundwater well, redoximorphic features, County Soil Survey
11. V <sub>WTD</sub> W Ch	ater table depth is
12. $V_{WTSLOPE}$	Percent of WAA with an altered water table slope
13. $V_{SOILPERM}$	Soil permeability
14. $V_{PORE}$ Per	rcent effective soil porosity
15. V <sub>SURFCON</sub>	Percent of adjacent stream reach with altered surface connections <u>67</u> %
16. $V_{CLAY}$ Per	reent of WAA with altered clay content in soil profile SICTY CLAY 6 %
17. $V_{REDOX}$ Rec	doximorphic features are (check one): present absent

P10+ 6

Appendix B Summaries and Forms for Field Use

	-	lot (11.3 m (37 ft) radius)
Jay Mag	18. $V_{TBA}$	Tree basal area (average of 0.04 ha plot values on next line)
Plat Aller	19. V <sub>TDEN</sub>	Number of tree stems (average of 0.04 ha plot values on next line)
	20. V <sub>SNAG</sub>	Number of snags (average of 0.04 ha plot values on next line)
	Sample va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
2-15 m	21. $V_{WD}$	Volume of woody debris (average of transect values on next line)
2-15m Fransets & Smaked	22. $V_{LOG}$	Volume of logs (average of transect values on next line)
		riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
au we	23. $V_{SSD}$	Number of woody understory stems (average of 0.04 ha plot values on next line)
Johnson J		0.04 ha plots: 1 <u>450</u> stems/ha 2 stem/ha 3 stems/ha 4 stems/ha
	Sample var the 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of plot
	24. $V_{GVC}$	Average cover of ground vegetation (average of 0.04 ha plot values on next line)
	25. V <sub>OHOR</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line) 83.8 % Average of 0.04 ha plots sampled: 1 90 % 2 90 % 3 60 % 4 95 %
	26. $V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line) $\frac{ \bigcirc \emptyset }{ \bigcirc \emptyset }$ % Average of 0.04 ha plots sampled: $\frac{1}{ \bigcirc \emptyset }$ % 2 $\frac{ \bigcirc \emptyset }{ \bigcirc \emptyset }$ % 3 $\frac{ \bigcirc \emptyset }{ \bigcirc \emptyset }$ % 4 $\frac{ \bigcirc \emptyset }{ \bigcirc \emptyset }$ %
	27. V <sub>COMP</sub>	Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 44.3 % Average of 0.04 ha plots sampled: 144.3 % 2 % 3 % 4 %
1,0,04 kin 6		
1-0,04 hu for short sophisophisophisophisophisophisophisophi	is surged	
X M CON	> 143	

B34

PFO

### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment I	100 Sec. 1				and the second second second		
Project Name/Location:		•	HILLS	T.	lot Number	: <u>/</u> D	ate : <u>4-6-2</u>
			below, square db nns (m²/0.04 ha)				
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha
SILVERMI	12.14			SILVERM	9.6		
SYCAMME	10.4			11/2 - 11/2	12.2		
SILVERM	8.7				4.5		
SILVERM	6.3			II II	5,3	<u> </u>	
ALVERM	21.2			BoxELVER	10.1		
SILVERM.	9.0			SUGAPBERM	4.8		
Warm	1.8			SULFRELL	6.6		
IUELM.	10,3			AMIELM	10:1		
llue M.	12.1			BOX ELER	7.9	The second second	
	15,7			AM. ELM	40		
	615			BOYELLEY	6.0		
	1512			TO THE	5.9		
9. <i>V<sub>TDEN</sub></i> To	otal number	of tree sten	ed columns above = ms from above=	<u>27</u> (ste	ms/0.04 ha)	× 25 = <u>6</u>	stems/h
Tr Size C ecord number Tr Size C	r of stems in ansect 1	$\frac{O}{a \text{cre}} = 0.18$ $\frac{O}{a \text{cre}} = 0.18$ $\frac{O}{a \text{cre}} = 0.8$	s 1 (0.6-2.5 cm / nnsect 2 ** 87 × total numbers 2 (2.5 - 7.6 cm nsect 2 ** 92 × total numb	_ Total number of stems = / 1-3 in) alon Total number of stems =	er of stems = g 12 ft sectio r of stems =	$ \frac{2}{\dots  \zeta} $ n of Transe	tons/acr ect 1 and 2
Transect 1 Stem 1 = Stem 2 = Stem 3 =		n Size Clas diameter ₹40 • 3	Stem 1 Sten	<u>t 2</u> diameter	diameter <sup>2</sup> 22.1 10.2		1 and 2

Stem  $4 = \frac{}{}$ Total diameter  $^{2}$ 

68.3

Total diameter<sup>2</sup> of stems from both transects = 308.6

240.3

Stem 4 =

Total diameter<sup>2</sup>

### Plot 6

1.27		lass 3 tons / acre = $0.0687 \times Total\ diameter^2$ of stems from both transects = $0.0687 \times Total\ diameter^2$ of stems from both transects = $0.0687 \times Total\ diameter^2$	
		/ acre (sum of Size Classes 1-3 from above) =	
		$\frac{1}{2} \frac{1}{2} \frac{1}$	۵
	23. V <sub>SSD</sub> SAMPLE	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250: Subplot 1 Average Average × 250 = stems/ha	
2	24. V <sub>GVC</sub>	Estimate percent cover of ground vegetation in four m² subplots then average:  1 20 % 2 10 % 3 5 % 4 10 %	
2	25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m <sup>2</sup> subplots then average: $1 \underline{90} \% 2 \underline{90} \% 3 \underline{00} \% 4 \underline{95} \% \dots$ . Average $\underline{83.8} \%$	
2	26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1 100 % 2 100 % 3 100 % 4 100 %	
2	7. V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below Tree = $\bigcirc$ % Shrub/Sapling = $\underline{100}$ % Ground Vegetation = $\underline{33}$ % Average $\underline{44.3}$ %	

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica,
Celtis laevigata	Carpinus caroliniana	Campsis radicans 🗸
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 🌄	Toxicodendron radicans
	1	

J COMMON BLUE VIOLET S% J ASTER SP. 10% J CREEPING JENNY S%

Basal Area - PLOT 6

dbh (in)	dbh (cm)	cm²	x .000079
12.4	31.496	991.998	0.078
10.4	26.416	697.805	0.055
8.7	22.098	488.322	0.039
6.3	16.002	256.064	0.020
21.2	53.848	2899.607	0.229
9.0	22.860	522.580	0.041
9.8	24.892	619.612	0.049
10.3	26.162	684.450	0.054
12.1	30.734	944.579	0.075
15.7	39.878	1590.255	0.126
6.5	16.510	272.580	0.022
15.2	38.608	1490.578	0.118
9.6	24.384	594.579	0.047
12.2	30.988	960.256	0.076
4.5	11.430	130.645	0.010
5.3	13.462	181.225	0.014
10.1	25.654	658.128	0.052
4.8	12.192	148.645	0.012
6.6	16.764	281.032	0.022
10.1	25.654	658.128	0.052
7.9	20.066	402.644	0.032
4.0	10.160	103.226	0.008
6.0	15.240	232.258	0.018
5.9	14.986	224.580	0.018
6.2	15.748	248.000	0.020
6.0	15.240	232.258	0.018
22.5	57.150	3266.123	0.258
	To	otal	1.563

P55

	Assessment Team: H-7 PAVV  Project Name/Location: 7 HILLS PLOT 78 Date: 4-6-2017
	Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.
	1. $V_{TRACT}$ Area of wetland that is contiguous with the WAA and of the same subclass 890 ha
	2. $V_{CORE}$ Percent of wetland tract that is >300 m from unsuitable habitat
	3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat $72\%$
	4. $V_{SLOPE}$ Percent floodplain slope
	5. $V_{STORE}$ Floodplain width to channel width ratio 33.75/50
	6. $V_{MACRO}$ Percent of WAA covered with macrotopographic features
	Sample variables 7-17 based on a walking reconnaissance of the WAA
	7. $V_{FREQ}$ Overbank flood recurrence interval
	8. $V_{ROUGH}$ Roughness Coefficient $\underline{00}$ $(n_{BASE}) + \underline{10}$ $(n_{TOPO}) + \underline{100}$ $(n_{OBS}) + \underline{100}$ $(n_{VEG}) = \dots \underline{0.132}$
. 1	9. V <sub>SOILINT</sub> Percent of WAA with altered soils
	10. $V_{WTF}$ Water table fluctuation is (check one): present absent Check data source: groundwater well, redoximorphic features, County Soil Survey
	11. $V_{WTD}$ Water table depth is
	12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope
	13. $V_{SOILPERM}$ Soil permeability
1	14. $V_{PORE}$ Percent effective soil porosity
1	5. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections 67 %
1	6. $V_{CLAY}$ Percent of WAA with altered clay content in soil profile
1	7. $V_{REDOX}$ Redoximorphic features are (check one): present absent

PLOT 78

	circular plot (11.3 m (37 ft) radius)
and him	18. $V_{TBA}$ Tree basal area (average of 0.04 ha plot values on next line)
Port hu	19. $V_{TDEN}$ Number of tree stems (average of 0.04 ha plot values on next line)
	20. $V_{SNAG}$ Number of snags (average of 0.04 ha plot values on next line)
	Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
15M (	21. $V_{WD}$ Volume of woody debris (average of transect values on next line)
contact I	22. $V_{LOG}$ Volume of logs (average of transect values on next line)
	Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot
	23. $V_{SSD}$ Number of woody understory stems (average of 0.04 ha plot values on next line)
0.04 M	0.04 ha plots: 1 575 stems/ha 2 stem/ha 3 stems/ha 4 stems/ha
	Sample variables 24-26 in four (4) $m^2$ subplots placed in representative locations of each quadrant of the 0.04 ha plot
	24. $V_{GVC}$ Average cover of ground vegetation (average of 0.04 ha plot values on next line) $\boxed{72}$ % Average of 0.04 ha plots sampled: $\boxed{1}$ $\boxed{90}$ % $\boxed{2}$ $\boxed{90}$ % $\boxed{3}$ $\boxed{40}$ % $\boxed{4}$ $\boxed{90}$ %
	25. $V_{OHOR}$ Average cover of "O" Horizon (average of 0.04 ha plot values on next line) $100$ % Average of 0.04 ha plots sampled: $1100$ % 2 $100$ % 3 $100$ % 4 $100$ %
	26. $V_{AHOR}$ Average cover of "A" Horizon (average of 0.04 ha plot values on next line) $\underline{100}$ % Average of 0.04 ha plots sampled: $\underline{1100}$ % $\underline{2100}$ % $\underline{3100}$ % $\underline{4100}$ %
: 	27. $V_{COMP}$ Concurrence with all strata dominants (average of 0.04 ha plot values on next line) $33$ % Average of 0.04 ha plots sampled: $133$ % 2 % 3 % 4 %
-0.04 hu for	frees t
should someth	
7	s camped which
* IN. I	79 3.20°
Lat ")	

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha

Andrew State of the State of th	Team :		Iline				
Project Nan	ne/Location	:	MUS	P	lot Number	: <u>78</u> Da	te : <u>4-6-</u> 2
tecord dbh ( um resulting	cm) of trees y values in sh	by species laded colum	pelow, square db ns (m²/0.04 ha).	h values (cm² Record in 1	), multiply re $8.\ V_{TBA}$ , multiply	esult by 0.00 tiply by 25 (	00079 (m²), an m²/ha).
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh <sup>2</sup> (cm <sup>2</sup> )	$\times 0.00079$ (m <sup>2</sup> /0.04 ha)
GLIASH	9.8						
		······································					
**************************************							
		**************************************					
$V_{TBA}$ S			s from above =	(ster	ms/0.04 ha)	× 25 = <u>2</u>	5_stems/ha
		of snag ster	ns from above=	<u>(</u> ) (stems	/0.04 ha) × 2	25 = <u>0</u>	stems/ha
. $V_{SNAG}$ T	otal number						
. $V_{SNAG}$ To $V_{WD}$ /V cord number	otal number of Stock took to the stock to th	Size Class	1 (0.6-2.5 cm / (	0.25-1 in) alo	ng a 6 ft sect	tion of Trans	
$V_{SNAG}$ To $V_{SNAG}$ To $V_{WD}/V_{CO}$ cord number $V_{CO}$	otal number of too of stems in transect 1	Size Class	1 (0.6-2.5 cm / (	0.25-1 in) alo Total numbe	ng a 6 ft sect	tion of Trans	sect 1 and 2
$V_{SNAG}$ To $V_{SNAG}$ To $V_{WD}/V_{CO}$ Cord number $V_{CO}$	tog  tog  or of stems in ransect 1  Class 1 tons /	Size Class Trai	1 (0.6-2.5 cm / ( nsect 2	0.25-1 in) alo Total numbe of stems = .	ng a 6 ft sect	tion of Trans	sect I and 2  O tons/acre
V <sub>SNAG</sub> To The cord number Size Coord number Tr	tog er of stems in class 1 tons / er of stems in ransect 1	Size Class Trai acre = 0.18 Size Class Tran	1 (0.6-2.5 cm / 0 nsect 2	0.25-1 in) alogates and second from the contract of the contra	ng a 6 ft sector of stems =  12 ft section of stems =	tion of Trans	sect 1 and 2  tons/acre t 1 and 2
V <sub>SNAG</sub> To V <sub>SNAG</sub> To V <sub>SNAG</sub> To Cord number To Cord number To Size Cord number Cord Size Cord Size Cord Number Co	ctal number of the control of stems in the control of stems in the control of the control of stems in	Size Class Tranacre = 0.18 Size Class Tranacre = 0.89	1 (0.6-2.5 cm / 0 nsect 2 0 7 × total number 2 (2.5 - 7.6 cm / sect 2 0 12 × total numbe	0.25-1 in) along Total number of stems = . 1-3 in) along Total number of stems =	ng a 6 ft sector of stems = 12 ft section of stems = 15 ft section of s	n of Transec	sect I and 2  tons/acre t I and 2  tons/acre
V <sub>SNAG</sub> To V <sub>SNAG</sub> To V <sub>SNAG</sub> To Cord number To Cord number To Size Cord diamet	ctal number of the control of stems in the control of stems in the control of the control of stems in	Size Class Tranacre = 0.18 Size Class Tranacre = 0.89	1 (0.6-2.5 cm / ( nsect 2	0.25-1 in) along Total number of stems = . 1-3 in) along Total number of stems =	ng a 6 ft sector of stems =	n of Transec	sect I and 2  tons/acre t I and 2  tons/acre
V <sub>SMG</sub> To V <sub>SMG</sub> To V <sub>SMG</sub> To voice or number To Size Coord diametrates Transect 1 Stem 1 =	Log er of stems in ransect 1	Size Class Trai acre = 0.18 Size Class Tran acre = 0.89 n Size Class	1 (0.6-2.5 cm / 0 nsect 2 0 7 × total number 2 (2.5 - 7.6 cm / sect 2 0 2 × total number 3 (> 7.6 cm / > Transect 1 Stem 1 =	D.25-1 in) along Total number of stems = .  1-3 in) along Total number of stems = .  3 in) along 5 diameter	ng a 6 ft sector of stems = 1	n of Transec	sect I and 2  tons/acre t I and 2  tons/acre
/22. $V_{WD}$ /V cord number  Size Cord number  Tr  Size Cord diameter  Transect 1  Stem 1 =  Stem 2 =	Log er of stems in ransect 1	Size Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class diameter <sup>2</sup>	1 (0.6-2.5 cm / 0 nsect 2 0 7 × total number 2 (2.5 - 7.6 cm / sect 2 0 2 × total numbe 3 3 (> 7.6 cm / > Transect Stem 1 = Stem	0.25-1 in) along Total number of stems = . 1-3 in) along Total number of stems = . 3 in) along 5 2 diameter . 2 =	ng a 6 ft sector of stems =	n of Transec	sect I and 2  tons/acre t I and 2  tons/acre
O. $V_{SNAG}$ To $I/22$ . $V_{WD}/I$ ecord number $I/I$ Size Coecord number $I/I$ Size Coecord diametric $I/I$ Stem 1 =	Log er of stems in ransect 1	Size Class Tran acre = 0.18 Size Class Tran acre = 0.89 n Size Class diameter <sup>2</sup>	1 (0.6-2.5 cm / 0 nsect 2 0 7 × total number 2 (2.5 - 7.6 cm / sect 2 0 2 × total number 3 (> 7.6 cm / > Transect 1 Stem 1 =	0.25-1 in) alor Total number of stems = . 1-3 in) along Total number of stems = . 3 in) along 5 2 diameter 2 = . 3 = .	ng a 6 ft sector of stems =	n of Transec	sect I and 2  tons/acre t I and 2  tons/acre

PLOT 78

	Total tons Cubic feet	lass 3 tons / acre = $0.0687 \times Total\ diameter^2\ of\ stems\ from\ both\ transects$ = . O tons/acre / acre (sum of Size Classes 1-3 from above) = O tons/acre / acre = $(32.05 \times total\ tons/acre)/0.58$ = O cubic feet/acre / cubic feet/acre / cubic feet/acre / cubic feet/acre / cubic meters/ha
aue.	23. $V_{SSD}$ SAMPLE 24. $V_{GYC}$	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250: Subplot 1 $\frac{111}{111}$ Subplot 2 Average $\frac{23}{2} \times 250 = \frac{575}{5}$ stems/ha Estimate percent cover of ground vegetation in four m² subplots then average: 1 $\frac{40}{9}$ % 2 $\frac{80}{9}$ % 3 $\frac{40}{9}$ % 4 $\frac{80}{9}$ % Average $\frac{72}{9}$ %
	25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m² subplots then average:  1 100 % 2 100 % 3 100 % 4 100 %
	26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1 10 % 2 10 % 3 10 % 4 10 %
	27, V <sub>сомР</sub>	Determine percent concurrence with each strata using the table below Tree = $100\%$ Shrub/Sapling = $100\%$ Ground Vegetation = $100\%$ Average $100\%$ Webs.

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica 🗸	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica	Glyceria striata
Quercus phellos	Ilex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana	Toxicodendron radicans

PHALARIS 90%

#### Basal Area - PLOT 7B

	dbh (in)	dbh (cm)	cm²	x .000079
	9.8	24.892	619.612	0.049
_		To	tal	0.049

PSS

	ent Team :	A-tenus		
Project N	lame/Location:	7 11:115 Plot 8	Date	: 4-7-2017
Sample v	ariables 1-6 using a	erial photos, topographic maps,	scenic overlooks, loca	l informants, etc.
1. $V_{TRACT}$	Area of wetland th	nat is contiguous with the WAA $a$	nd of the same subclas	s <u>890</u> ha
2. $V_{CORE}$	Percent of wetland	d tract that is >300 m from unsuit	able habitat	47%
3. V <sub>CONNE</sub>	CT Percent of	wetland tract perimeter that is "c	onnected" to suitable h	abitat <u>72</u> %
4. V <sub>SLOPE</sub>		slope		
5. V <sub>STORE</sub>			그렇게 하는 것	
6. V <sub>MACRO</sub>	Percent of WAA c	overed with macrotopographic fe	atures	<u>6</u> %
Sample va	ıriables 7-17 based (	on a walking reconnaissance of	the WAA	
7. V <sub>FREQ</sub>	Check data source:	currence interval	, flood frequency curv	years es, regional
8. V <sub>ROUGH</sub>	Roughness Coeffic	eient $\frac{\omega^3}{n_{\text{BASE}}} + \frac{\omega^{0.5}}{n_{\text{TOPO}}} + \frac{\omega^{0.5}}{n_{\text{TOPO}}}$	$(n_{\text{OBS}}) + \frac{105}{100} (n_{\text{VE}})$	,)= <u>.095</u>
9. V <sub>SOILINT</sub>	Percent of WAA w	rith altered soils	********	<u>0</u> %.
10. V <sub>WTF</sub>	Water table fluctua Check data source:	tion is (check one): groundwater well, redoximor	present _\ phic features,√_ Count	absenty Soil Survey
11. $V_{WTD}$	Water table depth i Check data source:	sgroundwater well, redoximor	ohic features, <u>√</u> Count	y Soil Survey /.
12. V <sub>WTSLO</sub>	PE Percent of WA	A with an altered water table slop	e .	<u>38</u> %
13. $V_{SOILPE}$	<sub>RM</sub> Soil permeabili	ty		<u>6.4</u> (in./hr)
14. $V_{PORE}$	Percent effective so	il porosity	**************	<u>43</u> %
$5. \ V_{SURFCO}$	ON Percent of adjace	cent stream reach with altered sur		
$ 6. V_{CLAY} $	Percent of WAA w	ith altered clay content in soil pro	file	Y <u>0</u> %
7. $V_{REDOX}$	Redoximorphic feat	tures are (check one):	present	absent

Plot 8

Appendix B Summaries and Forms for Field Use

	circular p	lot (11.3 m (37 ft) radius)
-0.04 hu	18. $V_{TBA}$	Tree basal area (average of 0.04 ha plot values on next line)
Plot sampled	19. V <sub>TDEN</sub>	Number of tree stems (average of 0.04 ha plot values on next line) O stems / ha 0.04 ha plots: 1 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
	20. $V_{SNAG}$	Number of snags (average of 0.04 ha plot values on next line) stems / ha 0.04 ha plots: 1 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
	Sample va	riables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
2-15 ~ (	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line)
2-15 m { provised } southed	22. V <sub>LOG</sub>	Volume of logs (average of transect values on next line)
	the state of the s	riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
2-0-0=4 Mo-	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)
		0.04 ha plots: 1/ <u>o,∞o</u> stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
2 mokey	Sample va the 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of plot
	24. V <sub>GVC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) % Average of 0.04 ha plots sampled: 1 O _ % 2 O _ % 3 _ O _ % 4 _ O _ %
	25. $V_{OHOR}$	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26. $V_{AHOR}$	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
7	27. V <sub>COMP</sub>	Concurrence with all strata dominants (average of 0.04 ha plot values on next line) % Average of 0.04 ha plots sampled: 1 % 2 % 3 % 4 %
1-0.04 him sampled for should sapple A limit poor so	elot Frees	
Shrul/Supli		
D /m2 60	7 V	
TN Fac 5'	B34	

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha

### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

		* <u></u> /					te : <u>[4], 7 ,</u>
			ns (m <sup>2</sup> /0.04 ha).				
Species	dbh (cm)	dbh² (cm²)	$\times 0.00079$ (m <sup>2</sup> /0.04 ha)	Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)
- 7.)	4.4		· No. of the second		***************************************		
A CONTRACTOR OF THE PROPERTY O							
$8. V_{TBA} = 9$	Sum of values						
o. V <sub>TDEN</sub>	Γotal number		ns from above =			1.7	
$m{O},~V_{TDEN}$ $m{O},~V_{SNAG}$ $m{O},~V_{SNAG}$ $m{O},~V_{WD}$ $m{O},~V_{WD}$	Fotal number  Fotal number $V_{LOG}$ per of stems in  Fransect 1	of snag stern Size Class	ns from above= 1 (0.6-2.5 cm / nsect 2	(sten 0.25-1 in) al Total numb	ns/0.04 ha) × : ong a 6 ft sec	25 =tion of Trans	stems/ha
D. $V_{TDEN}$ D. $V_{SNAG}$ D.	Total number  Total number  V <sub>Log</sub> per of stems in  Transect 1  Class 1 tons	of snag stern Size Class Tra /acre = 0.18	ns from above= 1 (0.6-2.5 cm /	(stem 0.25-1 in) al Total numb r of stems = (1-3 in) alor	ong a 6 ft sec ber of stems =	25 = tion of Trans	stems/ha sect 1 and 2
O. $V_{TDEN}$ O. $V_{SNAG}$ O. $V_{SNAG}$ Coord number of Size ecord number of Size	Total number  V <sub>LoG</sub> per of stems in  Γransect 1  Class 1 tons in  per of stems in  Γransect 1  Class 2 tons in  Class 2 tons in  Class 2 tons in  Class 3 tons in  Class 4 tons in  Class 5 tons in  Class 5 tons in  Class 6 tons in  Class 7 tons in  Class 6 tons in  Class 7 to	of snag ster  Size Class  Tra  /acre = 0.18  Size Class  Trar  acre = 0.8	1 (0.6-2.5 cm / nsect 2 0 2 (2.5 - 7.6 cm / nsect 2 0 2 × total number 2 (2.5 - 7.6 cm / nsect 2 0 2 × total nu	(stem 0.25-1 in) al Total number of stems = (1-3 in) alor Total number of stems =	ong a 6 ft sector of stems =  ing 12 ft section of stems =	tion of Trans	stems/ha sect 1 and 2  tons/acre t 1 and 2  tons/acre
O. $V_{TDEN}$ O. $V_{SNAG}$ O. $V_{SNAG}$ O. $V_{SNAG}$ O. $V_{SNAG}$ O. $V_{WD}$ O. $V_{SNAG}$ O. $V_{WD}$ O. $V_{SNAG}$ O. $V_{WD}$ O.	Total number  V <sub>LoG</sub> per of stems in  Γransect 1  Class 1 tons in  per of stems in  Γransect 1  Class 2 tons in  Class 2 tons in  Class 2 tons in  Class 3 tons in  Class 4 tons in  Class 5 tons in  Class 5 tons in  Class 6 tons in  Class 7 tons in  Class 6 tons in  Class 7 to	of snag ster  Size Class  Tra  /acre = 0.18  Size Class  Trar  acre = 0.8	ns from above=  1 (0.6-2.5 cm / nsect 2	(stem 0.25-1 in) al Total number of stems = (1-3 in) alor Total number of stems =	ong a 6 ft sec ber of stems = 	tion of Transon of Transect	stems/ha sect 1 and 2  tons/acre t 1 and 2  tons/acre
O. $V_{TDEN}$ O. $V_{SNAG}$ O	Fotal number $V_{LOG}$ oer of stems in Fransect 1  Class 1 tons in Fransect 1  Class 2 tons in Electron stems in Elec	of snag ster  Size Class  Tra  /acre = 0.18  Size Class  Trar  acre = 0.89  in Size Class	1 (0.6-2.5 cm / nsect 2 0 2 × total number 2 2 × total number 3 (> 7.6 cm / Transect Stem 1 =	(stem 0.25-1 in) al Total number of stems = (1-3 in) alor Total number of stems = (-3 in) along 2 diameter	ong a 6 ft sec ber of stems = 	tion of Transon of Transect	stems/ha sect 1 and 2  tons/acre t 1 and 2  tons/acre
O. $V_{TDEN}$ O. $V_{SNAG}$ O.	Total number  VLoα per of stems in Transect 1  Class 1 tons per of stems in Transect 1  Class 2 tons peter of stems in Transect 1	of snag ster  Size Class  Tra  Acre = 0.18  Trar  acre = 0.89  in Size Class diameter	1 (0.6-2.5 cm / nsect 2 0 2 (2.5 - 7.6 cm / nsect 2 0 2 × total number s 3 (> 7.6 cm / 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	(stem 0.25-1 in) al Total number of stems = (1-3 in) alor Total number of stems = (2-3 in) along (2-4 diameter) (3-2 diameter)	ong a 6 ft sec ber of stems = 	tion of Transon of Transect	stems/ha sect 1 and 2  6 tons/acre tt 1 and 2  ) tons/acre

	PLOTS	
Size Class 3 tons / acre = $0.0687 \times Total\ diameter^2$ of stems from both transects = . Total tons / acre (sum of Size Classes 1-3 from above) =	₹ tons/acre cubic feet/acre	Vwe
Tally woody understory stems two 0.004 ha subplots then average and multi-Subplot 1 $\frac{1}{2}$	l <u>0, 000</u> stems/ha e:	
<b>25.</b> $V_{OHOR}$ Estimate percent cover of "O" Horizon in four m² subplots then average: $1 \frac{ U0\rangle}{ U0\rangle} \% 2 \frac{ U0\rangle}{ U0\rangle} \% 3 \frac{ U0\rangle}{ U0\rangle} \% 4 \frac{ U0\rangle}{ U0\rangle} \% \dots A$	verage <u>/00</u> %	
26. $V_{AHOR}$ Estimate percent cover of "A" Horizon in four m <sup>2</sup> subplots then average: 11 00 % 2106 % 3100 % 4100 %	verage <u>100</u> %	
27. $V_{COMP}$ Determine percent concurrence with each strata using the table below Tree = $\bigcirc$ % Shrub/Sapling = $\bigcirc$ % Ground Vegetation = $\bigcirc$ %	Average <u> </u>	

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica	Glyceria striata
Quercus phellos	llex decidua	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
San	Salix nigra	Sparganium sp.
	Ulmus americana	Toxicodendron radicans

PFO PLOT9

Assessme Project N	me/Location: 7 HILLS PLOT 9 Date: 4-7-201	The same of
Sample va	riables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.	
1. $V_{TRACT}$	Area of wetland that is contiguous with the WAA and of the same subclass	a
2. $V_{\it CORE}$	Percent of wetland tract that is >300 m from unsuitable habitat 47 %	6
3. $V_{\it CONNEC}$	Percent of wetland tract perimeter that is "connected" to suitable habitat 72 %	ó
4. $V_{SLOPE}$	Percent floodplain slope৩.৩৪ - %	6
5. $V_{STORE}$	Floodplain width to channel width ratio $31.5.5/50$	
6. V <sub>MACRO</sub>	Percent of WAA covered with macrotopographic features	ó
Sample va	ables 7-17 based on a walking reconnaissance of the WAA	
7. $V_{FREQ}$	Overbank flood recurrence interval	3
8. $V_{ROUGH}$	Roughness Coefficient $N_{BASE}$ ) + $N_{COPO}$ ( $n_{TOPO}$ ) + $N_{COPO}$ ( $n_{OBS}$ ) + $N_{COPO}$ ( $n_{VEG}$ ) = $N_{COPO}$	
9. $V_{SOILINT}$	Percent of WAA with altered soils	)
10. $V_{WTF}$	Water table fluctuation is (check one): present absent  Check data source: groundwater well, redoximorphic features, County Soil Survey	
11. V <sub>WID</sub>	Water table depth isinches Check data source: groundwater well, redoximorphic features, County Soil Survey	78
12. V <sub>WTSLOP</sub>	Percent of WAA with an altered water table slope	
13. $V_{SOILPER}$	Soil permeability	
14. $V_{PORE}$	Percent effective soil porosity	
15. V <sub>SURFCO</sub>	는 사람들은 경우 전환 전환 전환 전환 전환 전환 사람들이 가득하는 것이 하면 함께 하는 것이 하면 하는 것이다. 그런 사람들은 사람들이 다른 사람들이 되었다면 다른 사람들이 다른 사람들이 되었다면 다른 사람들이 되었다면 하는데 다른 사람들이 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면	
16. $V_{CLAY}$	Percent of WAA with altered clay content in soil profile SIMI CLAI. 0 %	
17. $V_{REDOX}$	Redoximorphic features are (check one): present absent	

PLOT 9

90.0 80.0 9		variables 18-20 from a representative number of locations in the WAA using a 0.04 ha plot (11.3 m (37 ft) radius)
noy ho	18. V <sub>TB</sub> ,	Tree basal area (average of 0.04 ha plot values on next line) $32.1 \text{ m}^2$ /ha 0.04 ha plots: 1 m²/ha 2 m²/ha 3 m²/ha 4 m²/ha
plot ho Something	19. V <sub>TD</sub>	Number of tree stems (average of 0.04 ha plot values on next line)
	20. V <sub>SN</sub>	Number of snags (average of 0.04 ha plot values on next line)
	Sample	variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
-15-1	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line)
-15 or markets { smalled	22. $V_{LOO}$	Volume of logs (average of transect values on next line)
		variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in stative locations of the 0.04 ha plot
در ۱۷مر م	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)
lot somelan		0.04 ha plots: 1 <u>375</u> stems/ha 2 stem/ha 3 stems/ha 4 stems/ha
	Sample the 0.04	variables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of ha plot
	24. $V_{GVG}$	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 46 % Average of 0.04 ha plots sampled: 149 % 265 % 3 30 % 440 %
	25. V <sub>оно</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26. V <sub>AHC</sub>	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
	27. V <sub>CON</sub>	Average of 0.04 ha plots sampled: 1/00 % 2 % 3 % 4 %
-0.04 hu ampted for hrub/sapling Almiz pla Sampled for Veyetod	plot tics?	
A mi pla	45	
Verstand	B34	Appendix B Summaries and Forms for Field Use

### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Record dbh (c	e/Location	•	11US		Plot Number	: <u>ຼ</u> ີD≀	ite : <u>4-7-</u>
			pelow, square db ns (m²/0.04 ha).				
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh <sup>2</sup> (cm <sup>2</sup> )	× 0.00079 (m²/0.04 ha
PIN OAK	17.8			Q. BICOLOR	141		
GR ASH	1/4			PINJAK	5.4		
PIN BAK	416			Am. EUM	11.0		
(.e., 16H	8.7			AM. FUN	4.2		
(12:16:14	7,0			CA ASH	7.6		
AM. ELM	5,4	***************************************		6.1. Ast	13.0		
Ga, ASH	12.6			DM. ELM	4.8		
PINOAK	Ų.			LR. 45H	10.6		
CL. 1154	13.1	***************************************		Ah. ELM	3,9		
(1. ASA	9,5			O: BICOLOK	14.8		
(i.l. 454	7.3			OL ASH	6.4		
MARCUM				PIWOAK	11.2		
). $V_{SNAG}$ To	tal number	of snag ster	ns from above=	(stem	s/0.04 ha) ×	25 =	stems/ha
$1/22, \ V_{WD}/V_{c}$							
ecord number	r of stems ir	ı Size Class	1 (0.6-2.5 cm /	0.25-1 in) ale	ong a 6 ft sec	tion of Tran	sect 1 and 2
.cm	ansect 1 🚜	Tra	nsect 2 🧜 🔭	_ Total numb	er of stems =	7	
1 r.			7 × total number				The state of the s
Size C							
Size C ecord number			2 (2.5 - 7.6 cm	/ 1-3 in) alon	g 12 ft section	on of Transe	
Size C ecord number Tra	ansect 1(	7 Tran	2 (2.5 - 7.6 cm sect 2 **	/ 1-3 in) alon Total numbe	g 12 ft sections =	on of Transe	ct 1 and 2
Size C ecord number Tra Size C ecord diamete	ansect 1( lass 2 tons / er of stems i	Tran acre = 0.89 n Size Clas	2 (2.5 - 7.6 cm sect 2 ** 22 × total numb s 3 (> 7.6 cm /	/ 1-3 in) alon Total numbe er of stems =	g 12 ft section of stems =	on of Transe	ct 1 and 2  one of tons/acr
Size C ecord number Tra Size C ecord diamete Transect 1	ansect 1( lass 2 tons / er of stems i diameter	$\frac{9}{4}$ Tranding Transition Tr	2 (2.5 - 7.6 cm sect 2 ** 22 × total numb s 3 (> 7.6 cm / Transect	/ 1-3 in) alon  Total number of stems =  >3 in) along  2 diameter	g 12 ft sections of stems =	on of Transe	ct 1 and 2  one of tons/act
Size C ecord number  Tra Size C ecord diamete  Transect 1 Stem 1 =	ansect 1( lass 2 tons / er of stems i	Tran acre = 0.89 n Size Clas	2 (2.5 - 7.6 cm sect 2 ** 22 × total numb s 3 (> 7.6 cm / Transect Stem 1 :	/ 1-3 in) alon Total number of stems = >3 in) along 2 diameter =	g 12 ft sections of stems =	on of Transe	ct 1 and 2  one of tons/act
Size C ecord number  Tra Size C ecord diamete  Transect 1 Stem 1 = Stem 2 =	ansect 1( lass 2 tons / er of stems i diameter	$\frac{9}{4}$ Tranding Transition Tr	2 (2.5 - 7.6 cm sect 2 ** 22 × total numb s 3 (> 7.6 cm / Transect Stem 1 : Stem	/ 1-3 in) alon  Total number of stems =  >3 in) along  2 diameter  = 6  1 2 =	g 12 ft sections of stems =	on of Transe	<u>∘</u> tons/acr
Size C ecord number  Tra Size C ecord diamete  Transect 1 Stem 1 =	ansect 1( lass 2 tons / er of stems i diameter	$\frac{9}{4}$ Tranding Transition Tr	2 (2.5 - 7.6 cm sect 2 ** 22 × total numb s 3 (> 7.6 cm / Transect Stem 1 : Stem	/ 1-3 in) alon  Total number of stems = >3 in) along  2 diameter = 5  1 2 = 13 =	g 12 ft sections of stems =	on of Transe	ct 1 and 2  one of tons/acr
Size C ecord number  Tra Size C ecord diamete  Transect 1 Stem 1 = Stem 2 = Stem 3 =	ansect 1 (lass 2 tons / er of stems i diameter	$\frac{9}{4}$ Tranding Transition Tr	2 (2.5 - 7.6 cm	/ 1-3 in) alon Total number of stems = >3 in) along 2 diameter = 6 12 = 13 = = = = = = = = = = = = = = = = =	g 12 ft section of stems =	on of Transe	ct 1 and 2 <u> </u>
Size C ecord number  Tra Size C ecord diamete  Transect 1 Stem 1 = Stem 2 = Stem 3 = Stem 4 = Total diamete	ansect 1 (lass 2 tons / er of stems i diameter	Tran acre = 0.89 n Size Class diameter <sup>2</sup> 92,2	2 (2.5 - 7.6 cm	/ 1-3 in) alon Total number of stems = >3 in) along 2 diameter = 6 12 = 13 = = meter <sup>2</sup>	g 12 ft section of stems =	on of Transe	ct 1 and 2 <u> </u>

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-			

Total tons Cubic feet	lass 3 tons / acre = $0.0687 \times Total\ diameter^2\ of\ stems\ from\ both\ transects = . \frac{\sqrt{3}}{8.5} tons/acre / acre (sum of Size Classes 1-3 from above) = \frac{469}{3} tons/acre / acre = (32.05 \times total\ tons\ /\ acre)\ /\ 0.58 = \frac{469}{3} cubic feet/acre ers / ha = cubic feet / acre × 0.069 \frac{37.4}{3} cubic meters/ha \sqrt{469}$
23. V <sub>SSD</sub>	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:  Subplot 1
A No. 1 To St. 1	Estimate percent cover of ground vegetation in four m² subplots then average: 1 49 % 2 65 % 3 30 % 4 40 %
25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m <sup>2</sup> subplots then average: $1 \underline{95} \% 2 \underline{100} \% 3 \underline{100} \% 4 \underline{95} \% \dots Average \underline{97.5} \%$
26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1 100 % 2 100 % 3 100 % 4 100 % Average 100 %
27. $V_{COMP}$	Determine percent concurrence with each strata using the table below  Tree = 100 % Shrub/Sapling = 100 % Ground Vegetation = 100 % Average 100 %

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp. 🗸
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica	Glyceria striata
Quercus phellos	Ilex decidua 🌯	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 💢	Toxicodendron radicans 🗸

APTER SP. - 35%

OCAREX SP. - 2%

VIOLA SORORIA - 7%

OLAREX SP. - 3%

CREEPING SENNY-2%

Appendix B Summaries and Forms for Field Use

Basal Area - PLOT 9

dbh (in)	dbh (cm)	cm²	x .000079
17.8	45.212	2044.125	0.161
11.1	28.194	794.902	0.063
4.6	11.684	136.516	0.011
8.7	22.098	488.322	0.039
7.0	17.780	316.128	0.025
5.4	13.716	188.129	0.015
12.6	32.004	1024.256	0.081
4.1	10.414	108.451	0.009
13.1	33.274	1107.159	0.087
8.5	21.590	466.128	0.037
7.3	18.542	343.806	0.027
4.1	10.414	108.451	0.009
14.1	35.814	1282.643	0.101
5.4	13.716	188.129	0.015
11.0	27.940	780.644	0.062
4.2	10.668	113.806	0.009
7.6	19.304	372.644	0.029
13.0	33.020	1090.320	0.086
4.8	12.192	148.645	0.012
10.6	26.924	724.902	0.057
3.9	9.906	98.129	0.008
14.8	37.592	1413.158	0.112
6.4	16.256	264.258	0.021
11.2	28.448	809.289	0.064
6.2	15.748	248.000	0.020
10.7	27.178	738.644	0.058
6.0	15.240	232.258	0.018
4.7	11.938	142.516	0.011
5.8	14.732	217.032	0.017
6.5	16.510	272.580	0.022
	To	otal	1.285

PFO

Assessment Team:  Project Name/Location: 7 HILLS PLOT 0 Date: 4-14-1	Z
Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, et	te.
1. $V_{TRACT}$ Area of wetland that is contiguous with the WAA and of the same subclass $\underline{890}$	_ ha
2. $V_{CORE}$ Percent of wetland tract that is >300 m from unsuitable habitat	_ %
3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat 72	_ %
4. $V_{SLOPE}$ Percent floodplain slope	<u>%</u>
5. $V_{STORE}$ Floodplain width to channel width ratio $.5.7.06 / 50$	
6. V <sub>MACRO</sub> Percent of WAA covered with macrotopographic features	_%
Sample variables 7-17 based on a walking reconnaissance of the WAA	
7. V <sub>FREQ</sub> Overbank flood recurrence interval	ars
8. $V_{ROUGH}$ Roughness Coefficient $\underline{103}(n_{BASE}) + \underline{100}(n_{TOPO}) + \underline{101}(n_{OBS}) + \underline{01}(n_{VEG}) = \dots \underline{01}$	45
9. V <sub>SOILINT</sub> Percent of WAA with altered soils	<b>%</b> .
10. $V_{WTF}$ Water table fluctuation is (check one): present $\sqrt{}$ absent Check data source: groundwater well, redoximorphic features, $\sqrt{}$ County Soil Survey	
11. $V_{WTD}$ Water table depth is	ies
12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope	%
13. V <sub>SOILPERM</sub> Soil permeability	ar)
14. V <sub>PORE</sub> Percent effective soil porosity	%
15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections <u>67</u>	%
16. $V_{CLAY}$ Percent of WAA with altered clay content in soil profile	%
17. $V_{REDOX}$ Redoximorphic features are (check one): present absent	

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius) 20.  $V_{SNAG}$  Number of snags (average of 0.04 ha plot values on next line) ......  $\underline{O}$  stems / ha 0.04 ha plots: 1 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot 21.  $V_{WD}$ Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot 23.  $V_{SSD}$  Number of woody understory stems (average of 0.04 ha plot values on next line) 0.04 ha plots: 1 875 stems/ha 2 \_\_\_\_ stem/ha 3 \_\_\_\_ stems/ha 4 \_\_\_\_ stems/ha Sample variables 24-26 in four (4) m<sup>2</sup> subplots placed in representative locations of each quadrant of the 0.04 ha plot 24.  $V_{GVC}$  Average cover of ground vegetation (average of 0.04 ha plot values on next line) . .  $\boxed{9}$  % Average of 0.04 ha plots sampled: 1  $\boxed{70}$  % 2  $\boxed{3}$  % 3  $\boxed{3}$  % 4  $\boxed{1}$  % 25.  $V_{OHOR}$  Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 96 % Average of 0.04 ha plots sampled: 195 % 290 % 3100 % 4100 % Average of 0.04 ha plots sampled: 1/00 % 2 100 % 3 100 % 4 100 % 27.  $V_{COMP}$  Concurrence with all strata dominants (average of 0.04 ha plot values on next line)  $\frac{78}{9}$  % Average of 0.04 ha plots sampled:  $1\frac{1}{9}$  % 2 \_\_\_\_ % 3 \_\_\_ % 4 \_\_\_ %

Aver

1-0.04 has plot

sampled for frees?

should sampled

Alm plots sampled

for ground vegetation.

B34

### Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

sum resulting  Species	dbh	dbh²	× 0.00079	Species	dbh	dbh²	× 0.00
	(cm)	(cm <sup>2</sup> )	(m <sup>2</sup> /0.04 ha)		(cm)	(cm <sup>2</sup> )	(m <sup>2</sup> /0.04
SUMBALL	<u> 6.3                                    </u>			***************************************	**************************************		
PED MARKE	م <i>دا</i> ل						
SWEETGUM REDWARD	18.3						
REDIMPLE REDIMPLE	<u> </u>						
BAX ELVER							
SWEET WM	225						AMENONIA MANAGEMENT
SHELLAMK	6,2						
GREEN ASH	18.2						
EDMANE	19.6						
	7.0.4				Silver control of the		
	100 mg 200 mg						
18. $V_{TBA}$ Su							
<b>19.</b> <i>V<sub>TDEN</sub></i> To	otal number		ns from above =		and the second second		
<ul><li>19. V<sub>TDEN</sub> To</li><li>20. V<sub>SNAG</sub> To</li></ul>	otal number		ns from above =		and the second second		
19. $V_{TDEN}$ To 20. $V_{SNAG}$ To 21/22. $V_{WD}/V_{TDEN}$	otal number otal number	of snag ster	ns from above=	(stem	s/0.04 ha) ×	$25 = $ $\mathcal{L}$	2stem
19. $V_{TDEN}$ To 20. $V_{SNAG}$ To 21/22. $V_{WD}/V$ Record number	otal number otal number otal number otal otal otal otal otal otal otal otal	of snag ster  n Size Class  Tra	ns from above= 1 (0.6-2.5 cm / 0 nsect 2	(stem 0.25-1 in) ale Total numb	ong a 6 ft secent of stems =	$25 = \underline{\qquad}$ $\text{ction of Tran}$ $= \underline{\qquad}$	2stem
19. $V_{TDEN}$ To 20. $V_{SNAG}$ To 21/22. $V_{WD}/V$ Record number Tra Size C	otal number otal number otal number otal number of stems in ansect 1         lass 1 tons	of snag ster  n Size Class Tra /acre = 0.18	ns from above= $1 (0.6-2.5 \text{ cm} / 0.6 + 0.5 \text{ cm} / 0.6 \text{ cm} / 0.6 + 0.5 \text{ cm} / 0.6  cm$	(stem 0.25-1 in) ale Total numb of stems =	ong a 6 ft sec	$25 = \frac{0}{25}$ etion of Training	stem
19. $V_{TDEN}$ To 20. $V_{SNAG}$ To 21/22. $V_{WD}/V$ Record number Transition Control of the control of th	otal number otal number otal number of stems in ansect 1     lass 1 tons of stems in	of snag ster  n Size Class Tra /acre = 0.18 n Size Class	ns from above= 1 (0.6-2.5 cm / ( nsect 2 <u> </u>    7 × total number 2 (2.5 - 7.6 cm /	(stem  0.25-1 in) ale  Total numb  of stems =  1-3 in) alon	ong a 6 ft sector of stems =	$25 = \frac{C}{C}$ etion of Transon of Transon	stem
19. $V_{TDEN}$ To 20. $V_{SNAG}$ To 21/22. $V_{WD}/V$ Record number $Tracket{Size C}$ Record number $Tracket{$	otal number otal number otal number of stems in ansect 1         lass 1 tons in ansect 1	of snag ster  n Size Class Tra /acre = 0.18 n Size Class Trar	ns from above= $1 (0.6-2.5 \text{ cm} / 0.6 + 0.5 \text{ cm} / 0.6 \text{ cm} / 0.6 + 0.5 \text{ cm} / 0.6  cm$	(stem  0.25-1 in) alo  Total numb  of stems =  1-3 in) alon  Total numbe	ong a 6 ft sector of stems =  12 ft sector of stems =	$25 = \underbrace{\frac{\mathcal{E}}{\mathcal{E}}}_{\text{etion of Transe}}$ on of Transe	stemnsect 1 and $\frac{1}{1.5}$ tons ect 1 and 2
19. $V_{TDEN}$ To  20. $V_{SNAG}$ To  21/22. $V_{WD}/V$ Record number  Tra  Size C  Record diameter	otal number  otal number  otal number  of stems in  ansect 1      lass 1 tons  r of stems in  ansect 1      lass 2 tons  er of stems	of snag ster  n Size Class Tra /acre = 0.18 n Size Class Trar / acre = 0.89 in Size Clas	1 (0.6-2.5 cm / (nsect 2 <u>                                    </u>	(stem  0.25-1 in) ale  Total numb  of stems =  1-3 in) alon  Total numbe  r of stems =  3 in) along	ong a 6 ft sector of stems =  12 ft sector of stems =  25 of stems =  50 ft section	$25 = \frac{C}{C}$ $26 = \frac{C}{C}$ $27 = \frac{C}{C}$ of Transect	stem nsect 1 and 1.5 tons act 1 and 2 3.6 tons
19. $V_{TDEN}$ To  20. $V_{SNAG}$ To  21/22. $V_{WD}/V$ .  Record number  Size C.  Record diameter  Transect 1	otal number  otal number  otal number  of stems in  ansect 1      lass 1 tons  r of stems in  ansect 1      lass 2 tons  er of stems	of snag ster  n Size Class Tra /acre = 0.18 n Size Class Trar / acre = 0.89 in Size Clas diameter	1 (0.6-2.5 cm / 0 nsect 2 JW 7 × total number 2 (2.5 - 7.6 cm / 0 nsect 2	(stem  0.25-1 in) alor  Total number of stems =  1-3 in) alor  Total number of stems =  3 in) along  diameter	ong a 6 ft sec er of stems =	$25 = \frac{C}{C}$ $26 = \frac{C}{C}$ $27 = \frac{C}{C}$ of Transect	stem:  nsect 1 and  1.5 tons  ct 1 and 2  3.6 tons
19. $V_{TDEN}$ To  20. $V_{SNAG}$ To  21/22. $V_{WD}/V_{SNAG}$ Record number  Tra  Size C  Record diamete $\frac{T_{TARSECT}}{T_{TARSECT}}$ Stem 1 =	otal number  otal number  otal number  of stems in  ansect 1      lass 1 tons  r of stems in  ansect 1      lass 2 tons  er of stems	of snag ster  n Size Class Tra /acre = 0.18 n Size Class Trar / acre = 0.89 in Size Clas	1 (0.6-2.5 cm / 0 nsect 2 JWT 7 × total number 2 (2.5 - 7.6 cm / sect 2	(stem  0.25-1 in) alo  Total numb  of stems =  1-3 in) alon  Total numbe  r of stems =  3 in) along  diameter	ong a 6 ft sector of stems =  12 ft sector of stems =  25 of stems =  50 ft section	$25 = \frac{C}{C}$ $26 = \frac{C}{C}$ $27 = \frac{C}{C}$ of Transect	stem:  nsect 1 and  1.5 tons.  ct 1 and 2
19. $V_{TDEN}$ To  20. $V_{SNAG}$ To  21/22. $V_{WD}/V$ .  Record number  Tra  Size C.  Record diameter  Transect 1	otal number  otal number  otal number  of stems in  ansect 1      lass 1 tons  r of stems in  ansect 1      lass 2 tons  er of stems	of snag ster  n Size Class Tra /acre = 0.18 n Size Class Trar / acre = 0.89 in Size Clas diameter	1 (0.6-2.5 cm / 0 nsect 2 JW 7 × total number 2 (2.5 - 7.6 cm / 0 nsect 2	(stem)  0.25-1 in) ale  Total number of stems =  1-3 in) alon  Total number of stems =  3 in) along  diameter  = =	ong a 6 ft sector of stems =  12 ft sector of stems =  25 of stems =  50 ft section	$25 = \frac{C}{C}$ $26 = \frac{C}{C}$ $27 = \frac{C}{C}$ of Transect	stem:  nsect 1 and  1.5 tons  ct 1 and 2  3.6 tons

Total tons . Cubic feet	lass 3 tons / acre = $0.0687 \times Total\ diameter^2$ of stems from both transects = $0.0687 \times Total\ diameter^2$ of stems from both transects = $0.0687 \times Total\ diameter^2$ of stems from both transects = $0.0697 \times Total$ tons/acre / acre (sum of Size Classes 1-3 from above) = $0.0697 \times Total$ tons/acre / acre = $0.0697 \times Total$ tons/acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre / acre = $0.0697 \times Total$ tons/acre / acre
23. $V_{SSD}$ ON SAMPLE 24. $V_{GVC}$	Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:  Subplot 1 H H H Subplot 2 Average 35 × 250 = . 875 stems/ha  Estimate percent cover of ground vegetation in four m² subplots then average:  1 70 % 2 3 % 3 3 % 4 4 %
25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m <sup>2</sup> subplots then average: 1 95 % 2 90 % 3 00 % 4 100 %
26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m² subplots then average:  1   00   % 2   00   % 3   00   % 4   00   %
27. V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below Tree = $100$ % Shrub/Sapling = $100$ % Ground Vegetation = $33$ % Average $38$ %

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum 🗸	Acer rubrum 🔼 🗸	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp. 🗸
Carya laciniosa	Carya laciniosa	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana 🖫 🌡	Campsis radicans
Fraxinus pennsylvanica	Celtis laevigata 🐐 🐧	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica 🕽 🗸	Glyceria striata
Quercus phellos	Ilex decidua 🖁 🔭	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 🐩 🍍	Toxicodendron radicans

1.389 50%=0.69 2090=027

ACER R. 9 25% ASTER SP. - 25 V ACER R. 9 25% ASTER SP. - 25 V LIQUIDAMBAR 0.442 31% CARPINUS C. 9 11% CREEPING JEHNY-15% V

Basal Area - PLOT 10

dbh (in)	dbh (cm)	cm²	x .000079
6.3	16.002	256.064	0.020
11.6	29.464	868.127	0.069
19.0	48.260	2329.028	0.184
18.3	46.482	2160.576	0.171
7.4	18.796	353.290	0.028
11.1	28.194	794.902	0.063
22.5	57.150	3266.123	0.258
6.2	15.748	248.000	0.020
18.2	46.228	2137.028	0.169
19.6	49.784	2478.447	0.196
20.4	51.816	2684.898	0.212
		Total	1.389

Assessment Project N	nt Team: ame/Location:	7 HILLS	PLOT II	Date :	4-14-17
Sample va	ıriables 1-6 using a	erial photos, topogra	phic maps, scenic ov	erlooks, local in	formants, etc.
1. V <sub>TRACT</sub>	Area of wetland the	nat is contiguous with t	he WAA and of the s	ame subclass	<u>890</u> ha
2. V <sub>CORE</sub>	Percent of wetland	d tract that is >300 m f	rom unsuitable habita	it	<u>47</u> %
3. V <sub>CONNEC</sub>	Percent o	f wetland tract perimet	er that is "connected"	to suitable habit	at <u>72</u> %
4. $V_{SLOPE}$	Percent floodplain	slope			<u>0,03</u> %
5. V <sub>STORE</sub>	Floodplain width t	o channel width ratio	5,706/.50	ngan Kabupatèn Kabupatèn	<u>// // </u>
6. V <sub>MACRO</sub>	Percent of WAA	overed with macrotop	ographic features	jajajaja koj jojajaja	···· <u>&amp;</u> %
Sample va	riables 7-17 based	on a walking reconna	issance of the WAA		
7. $V_{FREQ}$	Check data source	currence interval: gage data, local kr e, hydrologic mode	nowledge, flood fre		
8. V <sub>ROUGH</sub>	Roughness Coeffic	eient $\frac{\sqrt{3}}{2}(n_{\text{BASE}}) + \frac{\sqrt{3}}{2}$	$(n_{\text{TOPO}}) + \underline{*01} (n_{\text{OBS}})$	$+ \frac{1}{\cdot 1} (n_{\text{VEG}}) =$	<u>0,143</u>
9. V <sub>SOILINT</sub>	Percent of WAA v	vith altered soils	opokala la		<u>o</u> %.
10. V <sub>WTF</sub>	Water table fluctua Check data source	ntion is (check one): groundwater well,	redoximorphic featur	. present <u>√</u> res, <u>√</u> County Se	absent oil Survey
11. V <sub>WTD</sub>		is groundwater well,			
12. V <sub>WTSLOF</sub>	Percent of WA	A with an altered water	er table slope	a lacabad a desar al pera escre	<u>38</u> %
13. V <sub>SOILPER</sub>	RM Soil permeabil	ity			. <u>0.4</u> (in./hr)
14. $V_{PORE}$	Percent effective so	oil porosity			<u>43</u> %
5. V <sub>SURFCO</sub>	Percent of adja	cent stream reach with	altered surface conne	ections	67%
6. V <sub>CLAY</sub>	Percent of WAA w	ith altered clay content	in soil profile	a fina di manana di m Tanàna di manana di m	<u>O</u> %
17. $V_{REDOX}$	Redoximorphic fea	tures are (check one):		. present 🗸	absent

PLOTII

	5 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	ariables 18-20 from a representative number of locations in the WAA using a 0.04 ha lot (11.3 m (37 ft) radius)
a no C	18. $V_{TBA}$	Tree basal area (average of 0.04 ha plot values on next line)
Right Z	19. V <sub>TDEN</sub>	Number of tree stems (average of 0.04 ha plot values on next line)
5***	20. $V_{SNAG}$	Number of snags (average of 0.04 ha plot values on next line)
	Sample va	triables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot
2-15 % {	21. V <sub>WD</sub>	Volume of woody debris (average of transect values on next line)
t- sents L founded	22. $V_{LOG}$	Volume of logs (average of transect values on next line)
		riable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in tive locations of the 0.04 ha plot
Look him	23. V <sub>SSD</sub>	Number of woody understory stems (average of 0.04 ha plot values on next line)  0.04 ha plots; 1 950 stems/ha 2 stems/ha 3 stems/ha 4 stems/ha
	Sample va the 0.04 ha	riables 24-26 in four (4) m <sup>2</sup> subplots placed in representative locations of each quadrant of a plot
	24. V <sub>GVC</sub>	Average cover of ground vegetation (average of 0.04 ha plot values on next line) 20 % Average of 0.04 ha plots sampled: 1 15 % 2 5 % 3 25 % 4 35 %
	25. V <sub>OHOR</sub>	Average cover of "O" Horizon (average of 0.04 ha plot values on next line)
	26. V <sub>AHOR</sub>	Average cover of "A" Horizon (average of 0.04 ha plot values on next line)
1		Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 33.3% Average of 0.04 ha plots sampled: 133 % 2 % 3 % 4 %
1-0.04 ha		
Sampled Fo	ir trees?	
Shrub/508)		
1-0.04 has sampled for shrub/sorth	·s	Attion-
	, AMA V°	
N **:	דטם	Appendix B Summaries and Forms for Field Use

# Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

	cm) of trees l values in sh	by species b		oh values (cm	<sup>2</sup> ), multiply	result by 0.0	ate: $\frac{4-14}{}$ 00079 (m <sup>2</sup> ), and (m <sup>2</sup> /ha).
Species	dbh (cm)	dbh² (cm²)	× 0.00079 (m²/0.04 ha)	Species	dbh (cm)	dbh <sup>2</sup> (cm <sup>2</sup> )	× 0.00079 (m²/0.04 ha)
RED MAPLE	618			SWEETOW	13.6		
PED MARE	4.9			C.LACINIOS	a 4.0		
SNAG				PEDMANLE	5.7		
CWERTHIM	2.7			nl u	5,8		
RED MARLE	5.8			11 11	10.4		
EFD MARLE	14.5			NI II	23.1		
The state of	14.6						
AM. EUM	5.1						
REDMANE	11.2						
RED MARLE	9,5						
	18.8						
	20.3						
19. <i>V<sub>tden</sub></i> T 20. <i>V<sub>snag</sub></i> T 21/22. <i>V<sub>WD</sub></i> /J	otal number otal number	of tree stem	d columns above =  ns from above=  1 (0.6-2.5 cm /	(stem	ems/0.04 ha) s/0.04 ha) ×	$25 = \frac{42}{25}$ $25 = \frac{25}{2}$	stems/ha
Ti Size (	ransect 1 <u>U/f</u> C <b>lass 1</b> tons /	<u>////</u> Trai /acre = 0.18	nsect 2 <u>O</u> 7 × <i>total numbe</i>	_Total numb er of stems =	er of stems =	= <u>/0</u> 	1.9 tons/acre
and the second of the second	r of stems in	Size Class					ct 1 and 2
Record numbe Ti	ransect 1		sect 2				
Record numbe Ti Size C	ransect 1 // C <b>lass 2</b> tons /	acre = 0.89	2 × total numb	er of stems =		لے به وقع وقع و	1.8 tons/acre
Record number To Size Control diameter Transect 1 Stem 1 = Stem 2 = Stem 3 =	ransect 1 // C <b>lass 2</b> tons /	acre = 0.89	22 × total numb 3 3 (> 7.6 cm / <u>Transect</u> Stem 1 = Stem Stem	er of stems = >3 in) along: 2 diameter = 3.2 12 = 13 =		of Transect	1.8 tons/acre
Record number To Size Conditions of Conditio	ransect 1 11 Class 2 tons / er of stems i diameter 3.5	acre = 0.89 n Size Class diameter <sup>2</sup>	22 × total numb 3 3 (> 7.6 cm / Transect Stem 1 = Stem	er of stems = >3 in) along: 2 diameter = 3.2 12 = 13 =	50 ft section diameter	of Transect	1.8 tons/acre

	the contract of the contract o
	PLOTII
Total tons Cubic feet	lass 3 tons / acre = $0.0687 \times Total\ diameter^2\ of\ stems\ from\ both\ transects = . 1.5 tons/acre / acre (sum of Size Classes 1-3 from above) = $
23. $V_{SSD}$ OY SAMPLE 24. $V_{GVC}$	Subplot 1 Average 30 x 250 = 950 stems/ha
25. V <sub>OHOR</sub>	Estimate percent cover of "O" Horizon in four m² subplots then average: $1 \ \underline{00} \ \% \ 2 \ \underline{95} \ \% \ 3 \ \underline{100} \ \% \ 4 \ \underline{100} \ \% \ \dots \dots $ Average $\underline{98.8} \ \%$
26. V <sub>AHOR</sub>	Estimate percent cover of "A" Horizon in four m <sup>2</sup> subplots then average: $1 \   \ 00 \ \%$ $2 \   \ 00 \ \%$ $3 \   \ 00 \ \%$ $4 \   \ 00 \ \%$
27. V <sub>COMP</sub>	Determine percent concurrence with each strata using the table below  Tree = 100 % Shrub/Sapling = 50 % Ground Vegetation = % Average 33.3 %

Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	Acer rubrum	Arundinaria gigantea
Betula nigra	Betula nigra	Aster sp.
Carya laciniosa	Carya laciniosa * *	Boehmaria cylindrica
Celtis laevigata	Carpinus caroliniana	Campsis radicans
Fraxinus pennsylvānica	Celtis laevigata	Carex squarosa
Liquidambar styraciflua	Celtis occidentalis	Eragrostis alba
Quercus pagodifolia	Fraxinus pennsylvanica 📈 🔼	Glyceria striata
Quercus phellos	Ilex decidua *	Hypericum sp.
Quercus lyrata	Liquidambar styraciflua * *	Impatiens capensis
Quercus imbricaria	Nyssa sylvatica	Panicum sp.
Quercus michauxii	Quercus imbricaria	Parthenocissus quinquefolia
Quercus stellata	Quercus lyrata	Pilea pumila
Quercus palustris	Quercus phellos	Quercus phellos
Salix nigra	Quercus palustris	Salix nigra
	Quercus pagodifolia	Sauraurus cernuus
	Quercus stellata	Smilacina racemosa
	Platanus occidentalis	Smilax rotundifolia
	Salix nigra	Sparganium sp.
	Ulmus americana 🔭	Toxicodendron radicans
	19 201 = 8	Dicines Will a Ol

1,61 508 322 201 322

\* Rail maple = 1.12 \* socityme : 47 Am elm = :01 Shell Hillary = :01

B36 ((

38 > 508 = 19,20] = 8 x0146 = 8 Rol myk = 5 Conymiac = 2 \*Ash = 17

\*Ach= 17 Dex= 1 Southwar 2 Elm= 3 38 POSION IVY Z90 \*ASTER SR 590 \*CAREX SP. 590 \*CARPAMINE 3 \*BULBOSA 15%

Appendix B Summaries and Forms for Field Use

15 501 = 8 20% = 3

Basal Area - PLOT 11

dbh (in)	dbh (cm)	cm²	x .000079
6.8	17.272	298.322	0.024
4.9	12.446	154.903	0.012
27.0	68.580	4703.216	0.372
5.8	14.732	217.032	0.017
14.5	36.830	1356.449	0.107
14.6	37.084	1375.223	0.109
5.1	12.954	167.806	0.013
11.2	28.448	809.289	0.064
8.5	21.590	466.128	0.037
18.8	47.752	2280.254	0.180
20.3	51.562	2658.640	0.210
13.6	34.544	1193.288	0.094
4.0	10.160	103.226	0.008
5.7	14.478	209.612	0.017
5.8	14.732	217.032	0.017
10.4	26.416	697.805	0.055
23.2	58.928	3472.509	0.274
_		Total	1.610